



# GROWTH REPORT



2015

*'The true power of a nation is the number of  
scientifically educated citizens.'*

*Hitel (Credit) 178.  
Count István Széchenyi*



# GROWTH

## REPORT

2015

Published by the Magyar Nemzeti Bank

Publisher in charge: Eszter Hergár

H-1054 Budapest, Szabadság tér 9.

[www.mnb.hu](http://www.mnb.hu)

ISSN 2416-3651 (print)

ISSN 2416-3716 (on-line)

---

*Pursuant to Act CXXXIX of 2013 on the Magyar Nemzeti Bank, the primary objective of Hungary's central bank is to achieve and maintain price stability. Low inflation ensures higher long-term economic growth and a more predictable economic environment, and moderates the cyclical fluctuations that impact both households and companies. Without prejudice to its primary objective, the MNB supports the maintenance of the stability of the financial intermediary system, the enhancement of its resilience, its sustainable contribution to economic growth; furthermore, the MNB supports the economic policy of the government using the instruments at its disposal.*

*The growth trends of the economy may influence, both directly and indirectly, the ability of monetary policy to reach its objectives set out in the MNB Act and consequently the conduct of monetary policy. Changes in the dynamics and structure of economic growth may determine the evolution of short-run inflation trends, while the longer-term growth potential and its factors may have a fundamental impact on the assessment of the financial stability of the economy. With that in mind, the Magyar Nemzeti Bank will provide an annual overview of the most important trends shaping economic growth over the short, medium and longer term, presenting its assessments to members of the profession at home and abroad in its Growth Report.*

The analyses in this Report were prepared under the direction of Barnabás Virág, Executive Director of the Directorate Monetary Policy, Financial stability, and Lending Incentives. The Report was prepared by staff at the MNB's Directorate Economic Forecast and Analysis, Directorate Monetary Policy and Financial Market Analysis, Directorate for Fiscal and Competitiveness Analysis and Directorate Financial System Analysis and Directorate Economic Strategy and Planning. The Report was approved for publication by Dr György Matolcsy, Governor.

The Report incorporates valuable input from other areas of the MNB.



---

# Contents

<b>Summary of key findings</b>	7
<b>1 Global economic growth: transitory deceleration or the new norm?</b>	10
1.1 Arguments for secular stagnation	13
1.2 Transient factors of the financial crisis: balance sheet recession and aggregate demand	18
1.3 Deleveraging and balance sheet cleaning	19
1.4 Financial markets, investments and allocation efficiency	21
1.5 Absence of “patient” financing – the short-termism of the financial market	23
<b>2 Quantitative and qualitative conditions of the labour market</b>	30
2.1 Demographic processes	31
2.2 Qualification level of the labour force	42
2.3 State of health	55
2.4 Participation rate in Hungary in an international comparison	60
<b>3 Productivity potential in the Hungarian economy</b>	69
3.1 Development of productivity and the components thereof since the crisis	70
3.2 Causes of the deceleration	78
3.3 Conclusions	84
<b>4 Condition of Hungarian Economic Development in the light of alternative development and competitiveness Indicators</b>	88
4.1 Economic and social development	92
4.2 International competitiveness rankings	94
4.3 Position of Budapest in the international rankings	96
<b>5 Special topic: World trade slowdown and impacts on the Hungarian economy</b>	100
5.1 Stylised facts	101
5.2 Cyclical and structural explanations	103
5.3 Potential conclusions for Hungary	105
5.4 Summary	106
<b>List of charts and tables</b>	107



---

# Summary of key findings

**The Growth Report presents a comprehensive view of the achieved and expected development trajectory of the Hungarian economy and its key determinants over a longer time horizon.**

The Magyar Nemzeti Bank issues a number of regular publications which analyse economic growth, such as the Inflation Report, the Report on the Balance of Payments and the Financial Stability Report. These publications, however, tend to concentrate on shorter-term movements in the economy, analysing the effects of variables that influence monetary policy. The purpose of the Growth Report, which is published annually, is to present Hungary's growth path and its determinants directly, using standard as well as alternative indicators, and preferably identifying longer-term trends which may even encompass an entire business cycle. In addition to a detailed survey of the available domestic data, the analyses are complemented with international and historical comparisons. The last report was published in 2014 and focused on the Hungarian growth path since Hungary's EU accession, with particular attention to the post-crisis adjustment processes and the role of capital formation in longer-term growth trends. The current report primarily concentrates on the factors that have led to the development of a global economic environment characterised by moderate inflation, low interest rates and restrained growth. As regards conditions for domestic growth, we continue with a more in-depth analysis of the key factors of production. Trends in human capital and productivity were analysed both in terms of quantitative attributes and structural features. Finally, the effects of the macro-level growth were qualified by alternative indicators and regional surveys. The most important findings in the 2015 publication can be summarised as follows:

**Global growth and a more dynamic expansion of trade may remain out of reach for a longer period of time.**

Even more than seven years after the outbreak of the global crisis in 2008-2009, economic growth in the developed economies remains moderate. Despite the extremely accommodating monetary policy environment, inflation is still low and the labour market recovery is slow and sluggish. In recent years, significant risks to growth were seen even in the emerging economies, which had previously been the engines of growth after the crisis. The recovery period, which is considerably slower than those experienced after previous crises, may be attributable both to structural reasons and to special features of the current financial cycle. Due to the more moderate global growth environment, the preservation and improvement of competitiveness play an even more important role in the maintaining the dynamic expansion of domestic exports.

In relation to the longer-term structural growth capacity, the effects of deterioration in demographic factors appeared already before the crisis, first in the developed regions and later in the less developed regions. In addition, productivity growth gradually decelerated due to the weakening macroeconomic effect of innovations. The share of investments in aggregate demand has declined in the developed regions, which may curb productivity growth even over the longer run. In contrast to past innovation waves in economic history, an increasing part of current innovation focuses on consumption rather than on production. According to certain analyses, in the case of production-related innovations the spread of innovation (known as "diffusion effect") has also decelerated from the leading edge of the world to the small and medium-sized enterprises.

**Persistent deceleration can be observed in almost all factors of production, which was further exacerbated by the crisis.**

In addition to the real economic factors, long-term financial factors also influence growth prospects. The short-termism of the financial markets also acts against the expansion of capacities and investment in research and development, which paves the way for longer-term success. Enterprises allocate a steadily decreasing

portion of their profit to developing their capacities, while they increasingly favour financial investors and stock-owning managers through dividend payments and share buy-backs. This attitude is also rewarded by the stock exchanges. The short-termism of financial markets is also reflected by the attitude of venture capital investors, who prefer to participate in development only in the later phase, which is closer to market entry and thus represents lower risk. Since state research and development expenditures are often the first to fall victim to fiscal adjustment programmes, public R&D expenditures are also not able to offset the shortfall in corporate expenditures.

**The reduction of debt accumulated before the crisis has generated prolonged deficiencies in demand, which may also appear in the emerging market economies to an increasing degree.**

Due to the debt overhang of the pre-crisis years, many sectors are still struggling with high accumulated debts, and the repayment and interest burdens on these debts reduce disposable income. Since deleveraging is occurring simultaneously in several sectors of the economy – i.e. the public and household sector – as well as in a number of large regions, the generation and growth of incomes is also slow due to the slack aggregate demand. Aside from the overly low inflation, the reduction of debt is also hindered by the growth in income inequalities experienced in recent decades.

**Since 2010, the participation rate of the Hungarian labour force has risen significantly even in an international comparison. However, by the end of the decade demographic trends may generate increasingly acute constraints.**

Following the crisis, the participation rate increased at the highest rate in Hungary among the Visegrád countries, but nevertheless remains low by international standards. Despite the general strengthening in domestic labour supply, the participation rate lags behind the international averages, which can still be linked primarily to a few, partially overlapping, social groups. Compared to developed European countries, a minor shortfall is seen in the participation rate of those with higher education, a group which usually shows a higher activity rate. In addition to the demographic composition, the lower participation rate in Hungary may also be attributable to the differences existing in the level of education.

According to the demographic projections, in the coming decades the aging of the population may continue in Hungary as well, similarly to the international trends. As regards the labour market, the most significant change may be the decrease in the working-age population, due to which the demographic changes may generate increasing labour supply challenges over the long run. The demographic impacts may be offset by the improvement of the qualitative attributes of human capital and a further increase in the participation rate of low-activity groups.

**The qualitative attributes of education, which show segmentation, generally lag behind the regional averages.**

The ratio of those holding a higher education degree has increased significantly since the millennium. The ratio essentially corresponds to the average value in the Visegrád countries, but is still below the ratio in the more developed countries. As a result of technological progress, in the coming decades labour demand for those holding engineering and natural science degrees may increase. In addition to the holders of a higher education degree, the ratio of those with secondary school education is also lower compared to the more developed EU countries. Based on the results of international tests, in the past period the performance of Hungarian students lagged behind the average of the OECD countries, which implies that the quality of both primary and secondary school education should be improved in Hungary. Secondary school education is also characterised by regional duality. The best performing schools are mostly concentrated in the capital. Finally, apart from the knowledge obtained in education, the population's state of health also influences the contribution of human capital to production. Life expectancy has gradually increased in Hungary in the past decades, but on the whole it lags behind the value that would be justified on economic grounds.

**With regard to productivity growth, the highest potential may be identified at the level of small and medium-sized enterprises.**

The growth of Hungarian enterprises' productivity has lagged behind the regional average in the past decade. The phenomenon is partly attributable to the strong FDI inflows in the countries of the region – which took place later than in Hungary – which generated a strong increase in efficiency in certain countries right before or after the crisis. In addition, some notable country-specific effects can also be identified. In the case of the sectors producing for the domestic market, the slower recovery of domestic demand due to the high debts accumulated before the crisis appeared as a cyclical effect. In addition, as one-off impacts, the consequences of the global market problems of a few large enterprises also had a negative impact on domestic indicators. The slower reallocation of the productivity factors to more efficient enterprises also contributed to the lower productivity growth, as an intra-industry factor.

Productivity indicators are characterised by strong heterogeneity across enterprise size. The difference in the productivity of large and small, medium-sized enterprises can be deemed high by international standards. The reduction of the difference in SMEs' productivity to the regional average alone could generate higher output by roughly 4 percentage points. The relatively lower productivity of domestic SMEs in the past decades was also attributable to the more difficult access to affordable financing, the lower innovation activity, as well as to the shortcomings in professional and management capabilities. Targeted, persistent reinforcement of these areas may help capitalise on the growth potential hidden in SMEs' productivity growth.

**The alternative development indicators for Hungary usually reflect a more favourable relative situation than the GDP indicators.**

Based on alternative indicators, which also consider social and environmental aspects, Hungary shows higher maturity in global comparison than suggested by the per capita gross domestic product or its position in rankings that focus on economic competitiveness. With regard to the environmental quality and knowledge-based economy, Hungary belongs to the top 20 per cent of the world's countries. Indicators examining maturity in a broader sense – particularly indices containing the education dimension and examining life expectancy at birth – also reflect that in the case of Hungary the social inequalities mostly appear in the access to public services and healthy living conditions.

# 1 Global economic growth: transitory deceleration or the new norm?

*With the passing of the acute phase of the global financial crisis, decision-makers and analysts are gradually starting to focus on the prospects of the post-crisis period. Although the crisis is not yet over in all regions – one need only mention the uncertainties surrounding Greece in the euro area or the deteriorating economic performance of some large emerging countries which were major growth drivers in the global economy during the crisis – the factors determining the long-term growth prospects play an increasingly important role in the global growth developments of the near future. The longer-term growth prospects significantly influence the actual burdens and financial risk stemming from the outstanding debt accumulated in the pre-crisis period and during the crisis, and have a fundamental impact on economic decisions, such as private sector investment.*

*If the poor growth is mainly attributable to deleveraging, it will only be a temporary phenomenon and – although deleveraging may last for several years – it is not necessary to expect secular stagnation.<sup>1</sup> Due to the debt overhang of the pre-crisis years, many sectors are still struggling with high accumulated debts, and the repayment and interest burdens on these debts reduce disposable income. Since deleveraging is occurring simultaneously in several sectors of the economy – i.e. the public and household sector – as well as in a number of large regions, the generation and growth of incomes is also slow due to the slack aggregate demand. However, as growth gradually accelerates, it is possible that the debt burden of the indebted agents may gradually decrease, and if inflation returns to the central bank target of 2-3 per cent, the real burdens could also fall. Investments may pick up in line with improving prospects and disposable earnings.*

*However, if the deceleration of growth is more lasting and is attributable to factors independent of the financial crisis, there is real risk of secular stagnation even after the passing of the impacts of the crisis. Several questions and uncertainties with regard to the longer-term growth outlook already arose before the crisis and these were exacerbated by the impact of the crisis on the growth potential. Negative demographic factors already appeared before the crisis, first in the developed and later in the less developed regions. Productivity growth has gradually decelerated, due to the weakening macroeconomic effect of innovations. The share of fixed investments in aggregate demand has fallen in the developed regions, which may restrain productivity growth in the future as well. The increase in the economic weight of the service sectors, which is characterised by lower productivity, may have similar consequences.*

*In addition to the long-term real economy factors, long-term financial factors may also influence the growth prospects. It was already observed before the crisis that enterprises dedicated a steadily decreasing share of their profit to the development of their capacities and organisational capabilities, and at the same time increasingly favour the financial investors and managers with equity holdings through dividend payments and share buy-backs. Stock exchanges reward this conduct, where the investors value the shares of those enterprises that provide the portfolio investors with short-term benefits, rather than those that invest in their own long-term future. Another sign of the financial markets' short-termism is that even the venture capital investors appear only in the later phases of the development, which is closer to the market introduction stage and thereby representing lower risk. Riskier basic research is financed to a lesser extent both by large enterprises and investors financing the innovative small enterprises, where the state should take an increasing role. On*

---

<sup>1</sup> In the modern literature, this concept is associated with Alvin H. Hansen (1), who was the first to discuss the risk of “secular stagnation” in 1938. He delivered a speech on this topic as the President of the American Association for Economy (see Hansen, 1939). Discussing the growth expectations of the world economy, Eichengreen defined secular stagnation as a trend-like decline in the real interest rate, which reflects low investments compared to savings and which results in a permanent output gap and/or slow growth.

the other hand, the governments do not receive sufficient income from the profit of successful private sector developments launched on the market, which – after reinvestment – could ensure the high level of R&D activity in the long run. Moreover, the state research and development expenditures are often the first to fall victim to the fiscal consolidation programmes, when those become necessary due to any reason, as in the present crisis.

Long-term slow growth would be accompanied by a slower increase in living standards than before and the debt accumulated during the crisis will remain high compared to the earnings for a long time, resulting in permanent financial vulnerability. Consequently, it is important to identify the main causes of the poor growth, but this is not an easy task, as the demand and supply factors exercise mutual influence and the weakness of either of them also impairs the other factor.

Due to this and other factors, not only the long-term real factors require adjustment for returning to a growth rate that is close to the pre-crisis level, but adjustment is also necessary in the operation of the financial sector and in the incentives of the corporate managers in order to increase the investment activity and raise the potential growth rate to a satisfactory level.

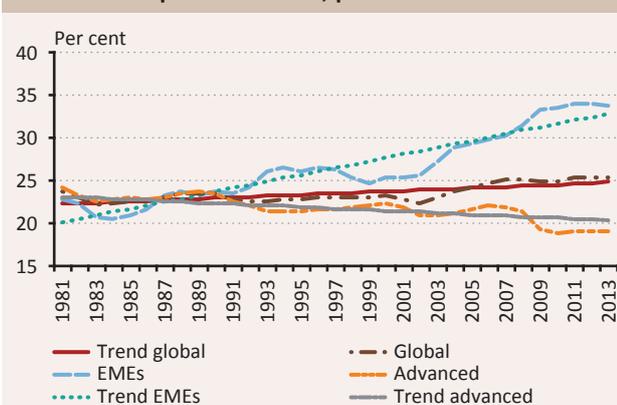
**Investments in the more important developed countries declined during the crisis compared to the pre-crisis period.** The largest decline was seen in the countries that had previously had a high investment rate and affected industries in which investments were mainly financed by loans, i.e. where the ratio of residential and non-residential property investments was high. However, investments also declined in countries and industries which were not hit by a crisis in the real estate sector. The arguments for secular stagnation are also substantiated by the fact that, on aggregate, gross fixed capital formation has been decreasing in a trend-like manner in the developed countries since the 1980s and the global investment growth was attributable to the rapid investment growth in the emerging markets (Chart 1-1).

In addition, this deceleration in investments is occurring in a period **when the interests rates are low compared to their historical average.** Similarly

to investments, this is also applicable not only to the post-crisis period – when the central banks, following an unprecedented accommodating policy, maintain a close to zero, or even negative key interest rate and due to the deleveraging the credit demand is weak (Chart 1-2), but it was typical already before the crisis (see the investment trend for developed countries (in Chart 1-1; Eichengreen, 2015).

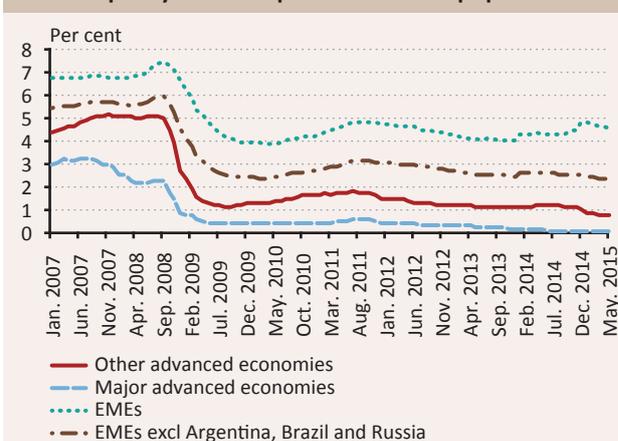
The risk of the secular stagnation is also increased by the fact that **inflation also fell to a historic low**, which significantly narrowed the central banks' room for manoeuvre in the stimulation of the economy. In accordance with the practices developed in past decades, central banks try to keep the economy on a steady, sustainable growth path using key interest rates. With very low inflation and the corresponding low, zero or recently – in the case of a few central banks – even negative nominal interest rates there is not much room left to stimulate the economy by

**Chart 1-1**  
Gross fixed capital formation, per cent of GDP



Source: BIS AR 2014

**Chart 1-2**  
Nominal policy rate as a per cent of total population



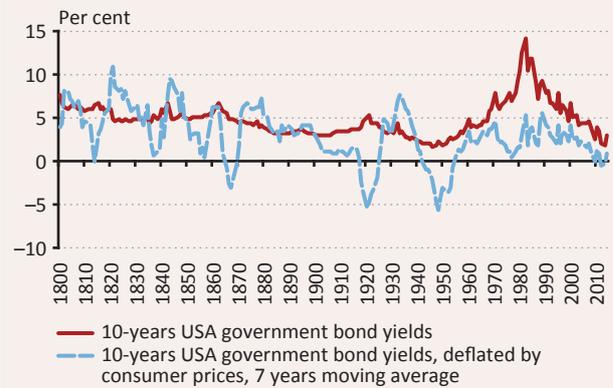
Source: BIS (2015) Chapter IV

lowering the key rate, as it has become increasingly difficult to reduce the real interest rate (Chart 1-3).

In view of the very low interest rates, some economists once again pointed out the **risk of secular stagnation as a probable “new normal” post-crisis status.**

In the following, we summarise the expected development of the most important factors determining the growth prospects of the global economy and the most critical findings voiced in the related discussions. First, we evaluate the processes suggesting a weakening growth trend in the global economy even before the financial crisis in 2007–2008, which threatens to become a permanent situation going forward. If these processes do not continue in the future or economic policy is able to change them, we may assume that the present slow growth is only attributable to temporary factors related to the crisis and the aftermath thereof. With the passing of these, growth may return to the higher rate seen in previous

**Chart 1-3**  
10-year USA government bond yields, deflated by consumer prices, 7-year moving average



Source: Eichengreen (2015)

decades. However, even in this case, economic policy may be a key factor in speeding this return to higher growth rates or even boosting them further.

# 1.1 Arguments for secular stagnation

The factors strengthening the risk of secular stagnation were last summarised by **Lawrence Summers**, former United States Secretary of the Treasury and leading academic economist, at the conferences held in November 2013 and February 2014, which launched a broad debate on the topic.<sup>2</sup> In the following, we summarise the most important factors discussed in these debates.

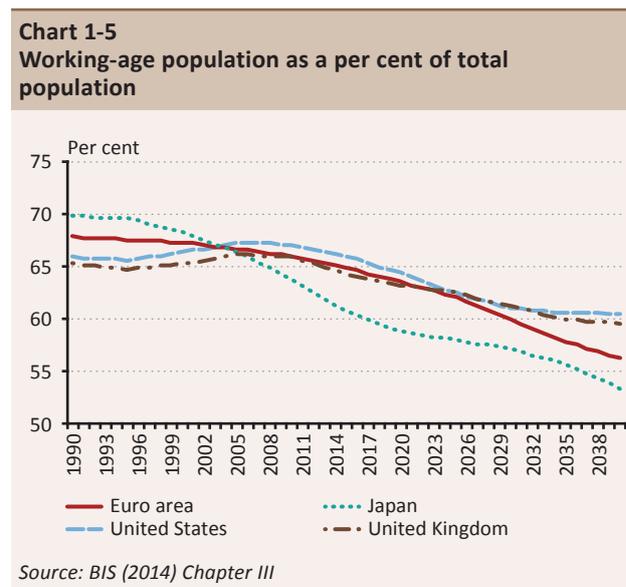
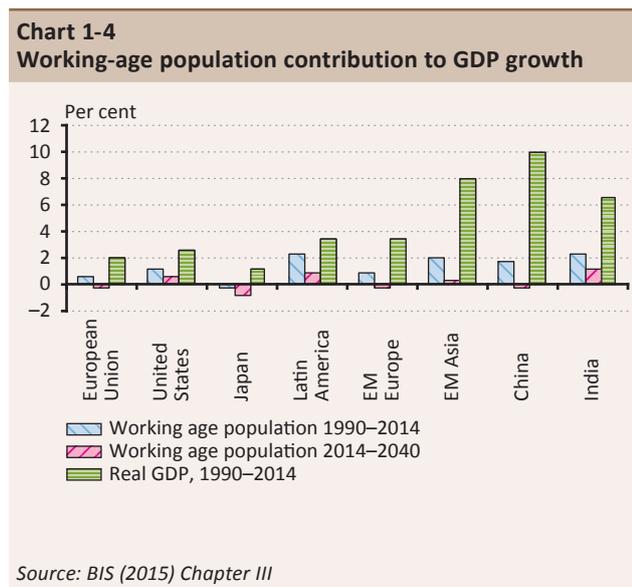
## 1.1.1 UNFAVOURABLE DEMOGRAPHY

Demography may contribute to secular stagnation as the **ratio of the economically inactive to the active**, i.e. the so-called dependency ratio, increases within the population. Chart 1-4 illustrates that in most of the world's regions the contribution of demographics to growth becomes negative as the population ages. Falling birth rates even in regions with traditionally high fertility points to the ageing of the societies. Population decline in the developed countries is not a rare phenomenon. It appears that as prosperity increases similar trends also start to occur in the less developed countries, due to the transformation

of traditional social structures and urbanisation. As a result of the prolonged average time of schooling and education the younger generation, which is few in number, becomes economically active at an increasingly higher age (Chart 1-5).

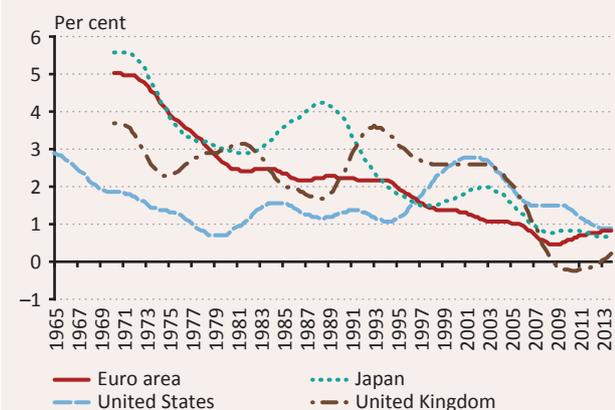
The decline in population and ageing societies pose a variety of **challenges** to economic growth. **Social security schemes** (pension, healthcare) follow various models around the world, but ultimately all of them are based on the assumption that the active population produces the goods and services that ensure the subsistence and healthcare of the economically inactive. The unfavourable demographic trends may generate tensions or at least require substantial adjustment to make it possible to maintain these systems with the active-inactive ratios expected in the future.

In a favourable situation, the **productivity growth rate** is fast enough to offset the negative demographic changes. In this case, the financial resources would be available to ensure that the living standards of the active population increase in the same way as



<sup>2</sup> Summers (2014). After Summers several others argued for and against the thesis. A good summary of these is presented in the book of Teulings and Baldwin (2014), and in the edited presentation of Eichengreen (2014).

**Chart 1-6**  
Growth in output per hour worked, per cent



Source: BIS (2014) Chapter III

those of previous generations, and meanwhile the welfare of inactive groups would not deteriorate either. Countries face a much more difficult choice if productivity growth is unable to offset the impact of the demographic trends. (Chart 1-6).

The development of productivity is influenced by many factors, and one of these is the development of the population. Even Hansen specified the deceleration of the population's growth rate as one of the potential causes of secular stagnation. Referring back to Adam Smith, he explained that in previous decades rapid population growth had generated expanding markets, new inventions and industries by facilitating an increasingly sophisticated and detailed division of labour, which is essential for productivity growth.<sup>3</sup> Recent analyses present the unfavourable impact of decelerating population growth or population decline, and the changing age structure on the economic growth through the development of savings and investments. According to this approach, in view of the downward **trend in population, less and less investment** is necessary, as presumably the future markets will also grow at a slower rate. With

a contracting population, even just preserving existing capacities at the same level is inexpedient in numerous areas. Investments decelerate compared to savings and the savings glut leads to permanently low interest rates. The fact that people expect to have longer retirement years, while the pensioners' propensity to consume is usually lower than that of the active population, results in higher savings. Ultimately, the low interest rates are not able to offset the moderate investment activity.

Several arguments against the aforementioned impacts of demographic changes were voiced during the debates. Many emphasised that with the lengthening of the life expectancy the **active stage of life may also be extended**. People not only live longer, they are also healthier.<sup>4</sup> The ratio of jobs that can also be filled by elderly people is increasing. In most countries, in the past the pensionable age has been adjusted from time to time to the increase in life expectancy. In the developed countries, the total hours worked has also fallen significantly over the decades, in parallel with slower population growth. The **lengthening of education time** may contribute to the higher level of productivity. It was pointed out that after a temporary period, **savings may also adjust to the investment needs**. In his paper, based on his own research results, Eichengreen<sup>5</sup> states that ageing runs down savings and investments at a similar rate, while the impact thereof on real interest rates and the current account is minimal. He also found no relation between the growth rate of GDP and population growth. Turner regards ageing and population decline as a challenge that can be managed by the available economic policy instruments much more easily than the fast growth rate of the population. While rapid population growth generates difficulties in job creation, in social aspects and in many other infrastructure areas, the most efficient way to adjust to population decline is to increase the activity of women, to raise the pensionable age as mentioned before and similar measures.<sup>6</sup>

<sup>3</sup> Hansen (1939) pp. 8-9. Hansen stated his position on the positive growth impact of the population growth contrary to the pessimistic opinion – which he referred to as Malthusian or Ricardian opinion – of many of his contemporaries. According to the pessimistic view, output is unable to keep pace with the population growth, because – for example – it requires the cultivation of agricultural areas providing poorer and poorer crop (decreasing yield), which increases production costs and the economy will be able to support the increasing population at a lower and lower level. Hansen acknowledged that certain labour saving technical innovations may temporarily increase unemployment, but he believed that over the longer run the technical improvement would be able to keep abreast with population growth. This is exactly what he believed to be jeopardised by the slowdown of the population growth.

<sup>4</sup> Turner (2014)

<sup>5</sup> Eichengreen (2015) p. 69.

<sup>6</sup> Turner (2014) and (2015). According to Turner, the support of women's activity and self-determination is the most efficient way to fight against the rapid population growth and poverty. The population growth rate in societies emerging from poverty will decelerate later on. Turner (2015).

### 1.1.2 LESS INNOVATION OR INNOVATIONS BEING LESS SUPPORTIVE OF MACROECONOMIC GROWTH

As seen before, this argument with regard to technology was already present in Hansen’s original suggestion, but in the modern debates it is connected with **the nature of the present innovations**, rather than with slow population growth. R. J. Gordon has been examining the reasons why innovations are not sufficiently reflected in the growth figures for many years. His previous works were interpreted by economists as if Gordon had represented a technological pessimism, found the innovations insufficient and had not noticed the large volume of innovations of our days.<sup>7</sup> In the present debate, Gordon<sup>8</sup> focused on demonstrating that **despite the numerous innovations productivity in the USA is decreasing in a trend-like manner**, and investments are not sufficiently profitable. Measuring productivity by the total factor productivity, he demonstrates that while the efficiency of the US economy between 1920 and 1970 increased at a rate of 1.2 and 3.2 per cent in the absorption of the work and capital inputs, respectively, on ten-year average, prior to 1920 and after 1970 this value was well below 1 per cent, mostly closer to one half per cent. Gordon does not attribute this deterioration of efficiency to the absence of the innovations: he believes that it is impossible to achieve the productivity growth rate of 1920-1970 even if the volume of innovations does not decrease. Gordon also sees the main reasons in the unfavourable demographics, the decreasing activity rate, the increase of income inequality and the uncertainties arising from high government debt.

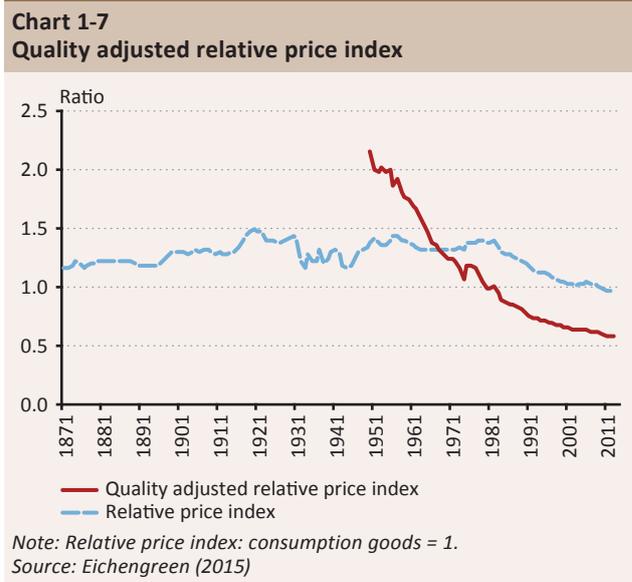
In a previous analysis, Gordon demonstrated that the higher gains in productivity were usually related to the spread of **high impact technical innovations**. In this respect, the innovations are not of equal impact: some innovations improve productivity only in a few industries, while others do so in a number of industries. The present productivity deceleration coincides with the spread of information technology, which was explained by several hypotheses. According to one explanation the effect of information technology is not reflected in the productivity statistics, because computers gained ground only in a few industries, mostly in the financial

and the commercial sectors. Others argue that what we are seeing today is **only the afterlife of the technical revolution of information technology, when it reaches personal communication and entertainment**. The productivity improving impact peaked in the 1990s with the large network computers, but by now this impact has gone. Many economists believe that the welfare benefits provided by the smart phone (or more generally and officially, by consumer electronics) are, by nature, not reflected in GDP, because they result only in the growth of personal welfare, which represents no market transaction and as such it is not included in the system of national accounts.

According to Eichengreen, it is not disputed that at present innovation covers mostly consumer goods, which may have contributed to the deceleration of growth. A great deal depends on how large a slice of the economy the next wave of innovations will cover. As the scope of innovation waves was variable in the past as well, nothing proves that the present trend will necessarily continue.<sup>9</sup>

### 1.1.3 RELATIVE PRICE DECREASE OF CAPITAL GOODS

Another possible explanation for the structural lag of investments compared to savings refers to the relative cheapening of capital goods. The **relative**



<sup>7</sup> Mokyr in Teulings and Baldwin (2014), pp. 83–90.

<sup>8</sup> See the study of Gordon in: Teulings and Baldwin (2014), pp. 47–60.

<sup>9</sup> Eichengreen (2015), p. 69.

**cheapening of capital goods allows the issue ratio to be maintained** even under decreasing investments, which points to a decrease in interest rates, changing the ratio of savings and investments.

The trend that started in 1950 indeed shows a sustained cheapening in the quality-adjusted relative prices (Chart 1-7).

It is not clear exactly what caused the relative downward move in capital goods prices. There is no such break in the quality-adjusted data, other than a minor, temporary regression in the 1970s. Nevertheless, nothing precludes similar productivity growth being achieved in the future in the production of consumer goods as was seen for capital goods. According to another argument, the **cheapening of capital goods increases the profitability of investments**, and therefore should raise investment demand. Accordingly, the aggregate **ultimate impact is uncertain**.<sup>10</sup>

### 1.1.4 INCREASING WEIGHT OF THE SERVICE SECTOR AND DECREASING WEIGHT OF THE MANUFACTURING SECTOR

Traditionally, the various branches of the manufacturing sector usually represent the most productive parts of the economy. Historically, the wealth of the modern age appeared in most societies with industrialisation, and the less developed countries usually try to rise to the level of the developed ones through industrialisation. The most developed countries have already passed the stage of development when the weight of industry is continuously growing, and the share of industry has been shrinking for several decades, to the benefit of the various service sectors. **The level and growth rate of productivity in the service sector are usually lower**, and therefore the **productivity** of developed countries may also **decrease simply due to the increasing weight of the service sector**. According to Rodrik,<sup>11</sup> the slow convergence of the developing countries is attributable to the fact that they left the path of industrialisation to increase the weight of services too early.

Slower productivity growth in services may be explained by the fact that it is more difficult to mechanise these sectors and they are usually labour-intensive. This includes, amongst others, sectors such as education, catering and personal services. The largest companies of our days, such as Apple or Google, do not require large volumes of investments in the traditional sense. Moreover, the statistics tend to underestimate or fully ignore the value of the investments that are typical in these sectors. These include, for example, research and development, software, education and human capital investment in general.

### 1.1.5 INCOME INEQUALITIES AND AGGREGATE DEMAND

In recent years, the shift of **functional income distribution from labour income to capital income** has become a central topic in economic debates. The issue of income distribution received little attention in the pre-crisis decades, although this trend was present then as well. However, following the crisis and in relation of the book of Thomas Piketty,<sup>12</sup> it suddenly came to the fore in the debates. Income distribution may contribute to secular stagnation, due to the fact that the aggregate demand may be reduced by the increase in the ratio of those belonging to the upper income bracket, as their consumption or spending willingness is lower, and accordingly their propensity to save is higher. That is, in the case of two countries with identical income levels, aggregate demand is structurally higher in the country characterised by more even income distribution. Piketty, Summers, Gordon and others fear that if the income distribution trend of recent decades continues, it **may contribute to structurally higher savings**, lower investments and slow growth with low interest rates. In countries with less even income distribution, a similar aggregate demand may be achieved if an increasing part of the spending is realised from credits.

Income distribution in the past reflected different trends. It reached such an unequal level as today before the 1929-1933 crisis, and many believe that it contributed to that crisis as well. The crisis, and particularly the period after World War II,

<sup>10</sup> See Blanchard et al. in: Teulings and Baldwin (2014), p. 105.

<sup>11</sup> Rodrik (2015)

<sup>12</sup> Piketty (2013)

was characterised by a greater equality of income distribution in most of the developed countries. This was attributable both to primary income distribution (wages usually increased in parallel with the productivity growth rate) and to the typical trends of secondary income distribution (progressive taxation, equalising effect of the social insurance) at that time. These trends reversed in the 1980s, in particular in the United States, but also in other developed countries, the increase in **labour incomes lagged behind the increase in productivity**, the progressivity of taxes decreased and the social insurance schemes also did not offset the increase in inequalities (Chart 1-8).

**Chart 1-8**  
Share in national income of the highest earning 1 per cent in the USA



The present financial **crisis management added a new dimension to the debates on distribution**, as the solutions employed also affect income distribution. In the first phase of the crisis in all developed and less developed countries, both fiscal

and the monetary policies made efforts to mitigate the severity of the downturn.<sup>13</sup> Income distribution considerations came to the forefront only at a later stage of the crisis, when financial sector stabilisation and putting financial market prices back on a growth path were accompanied by a much slower rate of wage and employment recovery. The unprecedented accommodation by central banks was a more suitable way of financial stabilisation, but it achieved results in the repeated stimulation of lending and in putting the economy on a growth path much more slowly. Meanwhile, fiscal policy – the legitimate objectives of which usually include the manipulation of income distribution based on social preferences – often focused on reducing the deficit that soared during the crisis, stopping the increase in government debt and decreasing it over the long run, while finding little scope to reduce income inequalities. For this reason, unemployment is still high in several countries, and the uncertain employment and poor wage conditions of most of the new jobs contribute to the weakness of aggregate demand and inflation falls short of the target on the monetary policy horizon.

Thus, sectors and social groups whose income depends on the profitability of the financial sector recovered sooner, although the objectives of monetary policy do not include the intentional manipulation of income distribution. However, the **method of crisis management had distribution consequences**. Central bank governors often mentioned the problems arising from this and always referred to them as a temporary side-effect, which will be resolved by returning to the growth path.<sup>14</sup> It is still being debated whether any and what kind of economic policy intervention is necessary for reducing income inequalities, which could help achieve a more stable growth path in the future.

<sup>13</sup> For more details, please refer to MNB (2014).

<sup>14</sup> See Bullard (2014) and Cœuré (2013).

## 1.2 Transient factors of the financial crisis: balance sheet recession and aggregate demand

As we saw, the **mostly “supply side” explanations** given for the low interest rates and the slow growth and low investment activity despite the low rates, **did not convince all observers**. Supporters of the explanations described above do not deny that the backwash of the crisis may still contribute to the poor growth; they simply state that even after the passing of those the global economy will have to face secular stagnation.

Bernanke, former Fed Chair, disagreed with Summers; he maintains his earlier opinion, according to which the **low interest rates reflect high global savings** rather than the steadily low investment demand.<sup>15</sup> He believes that in a low interest rate environment investments should not stay at a steadily low level. According to his first argument, it is a mistake to examine the savings and investment prospects merely within a single country. In his opinion, even if sufficient investment opportunities are not found in the USA (for example, due to the demographic changes mentioned by Summers), the market of developing countries, which offer higher return, may still remain attractive. And through this it is possible to create enough new jobs in the USA in the export sectors as well. However, even if the slow growth factors become

prevalent in the developing world as well, he deems it logically impossible that in a close to zero interest rate environment no profitable investments can be found: in such case even the smallest yield provides a return.<sup>16</sup> Hence Bernanke is sure that over time the central banks will achieve an economic recovery with the low interest rates.

Summers is less optimistic about the ability of low interest rates to stimulate demand. He sees the risk of secular stagnation also in the fact that the economic stimulus packages applied to date by the central banks tended to result more in a recovery in prices of securities and other assets. While many mentioned the risk of new bubbles, including the emerging countries as well, these packages hardly had any impact on the recovery of the real economy and the reduction of unemployment. Summers is of the opinion that bubbles are acceptable until a certain point, because he believes that economies are able to grow, to an increasing degree, only through bubbles. However, he is anxious about the fact that according to the latest trends **larger and larger bubbles are necessary for the economies to achieve satisfactory growth**, because these represent financial stability risks and an eventual crisis could easily annul the growth results.

<sup>15</sup> Bernanke (2015a) and (2015b).

<sup>16</sup> Bernanke cites Samuelson's graphic arguments, according to which under low – or sometimes even negative – interest rates, investments such as the straightening of the railroads' curves, even by removing the hills, should be implemented: due to the resulting lower fuel consumption the investment will surely pay off over time.

## 1.3 Deleveraging and balance sheet cleaning

This thread of the debate relates to the role of financial variables. In the foregoing the relation of savings, investments and interest rates closely followed the usual textbook and generally mainstream real economy explanation. By contrast – as was convincingly presented by Borio and Disyatat, and Borio<sup>17</sup> – interest rates are essentially shaped by monetary factors, which cannot be deduced from the real economic analysis and the development of the savings and investments in the real sense, which characterise the debates described above. To put it briefly, these monetary attributes are shaped by banks' lending activity, as well as by the central banks' and the economic policy's supervisory and macroeconomic stabilisation policy. **Insufficiently prudent lending practices of banks and the lax macroeconomic and supervisory policy may easily lead to financial and real economic overheating** both at the domestic and international level, as the lending capacity of the banking system is not restricted by the ("real") savings available in advance.

In this approach, the present crisis developed due to the credit boom and the debt overhang, and the protracted nature of the crisis is the consequence of the previously accumulated debt. **Indebted agents are striving to adjust their balance sheets:** a precondition for this is to save a higher portion

of their income than before, which can be used for repaying their debts, while refraining from new borrowing. Since within each country several sectors – households, the government, banks – and in the global economy several indebted geographic regions are simultaneously trying to deleverage, the result is weak domestic and foreign aggregate demand. Poor aggregate demand also has a dampening influence on output, which results in a close to stagnation situation (Table 1-1).

Richard Koo – whose name is linked with the term of "balance sheet recession" – states that in times of balance sheet recession **agents strive to minimise their losses** rather than to maximise profit.<sup>18</sup> He believes that this is the reason why the real economy is responding poorly to the stimulus applied by the central banks. When a company plans investments, and contemplates whether it is worth responding to the anticipated demand growth by capacity expansion, investment activity can be influenced by the level of interest rates, as an important cost component. In such cases, the central bank's interest rate policy can have an impact on the cyclical situation of the economy via investments and other interest-sensitive expenditures. However, when companies or even households are concerned about repaying their previous loans, they will not contemplate new borrowing and as such the low interest rates have no influence on their expenditures. According to Koo, in the **crisis fiscal policy should act as the last resort provider of aggregate demand**, which would help reduce the outstanding debt of the private sector. In the period of balance sheet recession, the efforts of private agents are aimed at increasing their savings. The growth decelerating impact of the synchronised deleveraging complicates the implementation of this effort, as one can save less from the decreasing or slowly increasing incomes, and the debt-to-income ratio decreases more slowly. In such a situation, income growth may be accelerated by the continued indebtedness of the budgets, under low capacity

**Table 1-1**  
**Comparison of balance sheet recession and secular stagnation**

Balance sheet recession	Secular stagnation
Cyclical, non-durable	Structural, durable (began before the crisis)
Financial variables: – excessive lending – indebtedness – balance sheet adjustment – sectoral reallocation	Real variables: – demography – technology – innovation – investment behaviour
<i>Source: MNB</i>	

<sup>17</sup> Borio and Disyatat (2011) and Borio (2015), and Tily (2012). See more details in the first chapter of the MNB Growth Report of 2014 (MNB 2014) and in Szalai (2014)

<sup>18</sup> Koo (2014) in: Teulings and Baldwin (2014).

utilisation the fiscal multipliers are high, public sector spending does not crowd out private spending, and thus they do not increase the interest rates and the threat of inflation is also small.<sup>19</sup> According to Koo, Japan got caught in the trap of secular slow growth, because it used fiscal policy timidly, fearing that the high government debt would be unsustainable.

The weak aggregate demand explanation of Borio<sup>20</sup> and his colleagues also emphasises the backwash of the balance sheet recession. The crisis was caused by the process during which the **interactions of the real economic and the financial cycles** were recognised neither by the private agents, nor by the economic policymakers. The economic policymakers – ignoring the excessive flexibility of the banking system – aimed at smoothing the real economic path, and at the same time tried to judge whether the economy was on a sustainable path based on their inflation projections. However, inflation appears to have less and less reliable predictive power with regard to the sustainable financial growth rate, and when the **overheating – which developed in addition to the price stability** – threatened to lead to financial instability, rapid and firm measures were taken to avoid the crisis. Economic policy became asymmetric, because during the boom it paid little attention to preventing the build-up of financial instabilities, and it failed to perceive the overheating in the economy, but it took firm measures to avoid the negative

consequences. According to Borio et al.<sup>21</sup> it was due to this asymmetric policy that during the crises the debts did not unwind and the next cyclical financial overheating started from higher debt levels.

According to Borio et al., the bad cycles of the repeated overheating and overcooling, developing under ever increasing outstanding debts and showing larger swings, **can be prevented by a more symmetric economic policy**: the central banks should cool the overheating already in the build-up phase. In order to do this, they should modify their strategy properly within the existing monetary policy mandates. However, if a financial crisis occurs anyway, they should understand that – as in the current situation – the possibilities of fiscal policy are limited in crisis management. Initially, it may be useful to permit an increase in **the deficit** to mitigate the crisis, but **over time** this instrument **becomes blunt** and it can only generate additional indebtedness and a financial bubble. Hence, they believe that the **fiscal policy's existing room for manoeuvre** should be used for **cleaning** the private sector's debts and the **balance sheets** of the banking sector, rather than for a general increase in aggregate demand. They mention the rapid and efficient management of the bank crisis by the Scandinavian countries as a positive example from the early 1990s, when during the crisis these countries quickly nationalised the banks, consolidated their bad debts and finally re-privatised them without suffering any budgetary loss.

<sup>19</sup> For more in Table 1-1

<sup>20</sup> Borio (2014)

<sup>21</sup> Uo.

## 1.4 Financial markets, investments and allocation efficiency

The textbook and mainstream macroeconomic approaches are mostly abstracted from the financial sector, as they assumed that apart from the occasional frictions or the temporary overstatement of external shocks and prolonged adjustment, their operation had no impact on the longer-term equilibrium path of the economies. **Well-informed agents see through the financial and monetary veil**, and they make their optimal decisions based on real considerations.

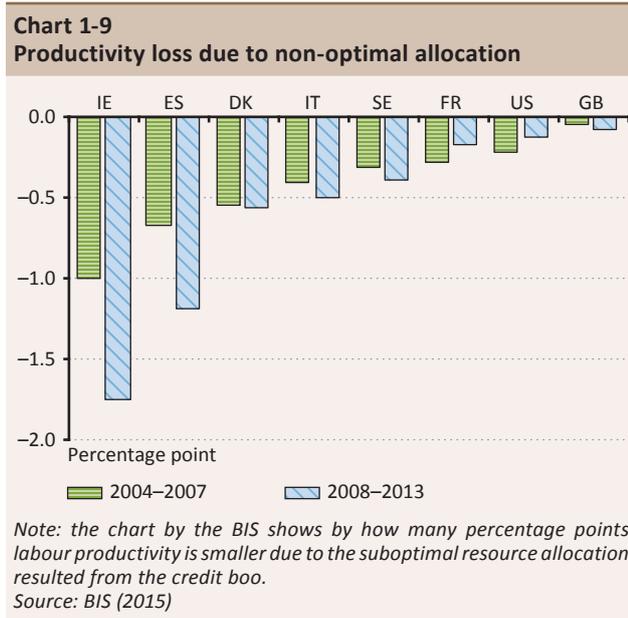
However, if it turns out that financial variables can steadily divert the allocation of resources from the sustainable path, it may happen that a longer adjustment will be necessary in the real economy as well, in order to reach the pre-crisis growth rate once again. Then the recovery from the financial crisis requires not only deleveraging, but also **real economy adjustment**, which is not only slow, but also expensive. It is enough to consider that due to the lax lending conditions before the crisis a large number of residential and other properties were built, which some private or corporate builders are unable to finance after the crisis. Due to the high degree of investment overhang only part of these can be sold, and even that at depressed prices. Such “misallocated” real assets cannot even be reconverted into other physical objects. In the new situation, most probably part of the machinery and equipment used in construction will also become redundant and difficult to exploit, and it is similarly difficult to convert these capital elements into cash. Finally, the headcount of the workforce employed in construction will be also too high due to the lower capacity requirement that can be sustained in the long run, and therefore the workforce must flow to such sectors the output of which is required permanently. This may as well entail the change of profession and geographical location, which is time consuming, and may also be accompanied by private and community costs.

We could estimate the possible degree of economic policy error, if we knew the impact on potential growth of the deviation from the resource allocation ensuring an optimal growth path. Up to now only a few analyses have dealt with the empirical estimation of this, partly due to the estimation difficulties.<sup>22</sup> In part, this is also attributable to the prevailing paradigm, which assumed that the financial sector and nominal variables cannot have a secular real economic impact. These few analyses include the work of Cecchetti et al. and the BIS 2015 report,<sup>23</sup> in which they tried to estimate the impact of the sub-optimal allocation of the resources on growth. According to the fundamental assumption of the research strategy, the expansion of **lending beyond a certain point** diverts real economic resources to an **increasing degree towards industries in which productivity lags behind the average**. Thus, the credit boom may be regarded as an indicator of deterioration in economic efficiency. According to BIS, the deterioration of productivity, as interpreted above, was significant: had the growth rate of lending not exceeded the growth rate of 1994–2000, the productivity growth rate in 2004–2007 would have been higher on an annual average by 0.2 per cent in the USA, by 0.4 per cent in Italy, by 0.7 per cent in Spain and by 1 per cent in Ireland (Chart 1-9).

Based on the above, it can be seen that the cause of the lower growth potential is **not that the economy is physically unable to generate higher output**: it does have this capacity, but the utilisation of the resources **in the given ratios and structures proved to be partially unsustainable in financial terms**. With different resource and income allocation, it may also be possible to achieve or even exceed the pre-crisis growth potential. For example, if properties had been built only in a sustainable volume and as a result of a more even income distribution, and the indebtedness of home buyers had also remained at

<sup>22</sup> In such research it must be demonstrated how the growth would have developed on a path that did not materialise. That is, a counterfactual-type question must be answered.

<sup>23</sup> Cecchetti and Kharroubi (2015). See also the “Credit boom-induced resource misallocations stifle productivity” section in BIS (2015) pp. 50–51.



a sustainable level, then part of the real resources could have been utilised in areas other than home construction. Until the adjustment is completed both in the balance sheets and in the allocation of the real resources, we indeed should expect that the post-crisis growth potential will fall short of the pre-crisis level, but in theory it cannot be ruled out that it will

once again reach it after a temporary period. The conclusion from these thoughts is that **if economic policymakers assume, ignoring these considerations, that the post-crisis growth potential is steadily lower** than that before the crisis and base their decisions on this assumption, **they risk contributing to the development of lower-than-possible growth potential**, as a kind of self-fulfilling prophecy.

In other words, the **misallocation of resources was already typical before the crisis due to the credit boom** and as a result, the potential output and the productivity of the economies fell short of the possible level, which could have been achieved by a close to optimal resource allocation. Thus, the conclusion is that in **theory the pre-crisis productivity growth is not impossible to achieve**. Naturally, the above does not mean that it will definitely materialise. It could be caused not only by the fault of economic policy by, for example, erroneously and steadily underestimating the economy's potential growth. Similarly to the pre-crisis situation, the private sector may engage in both intratemporal (among industries and countries) and intertemporal (between the present and future consumption, due to excessive or insufficient investments) allocation errors in the future as well.

## 1.5 Absence of “patient” financing – the short-termism of the financial market

Explanations other than those voiced by the advocates of secular stagnation have also been provided for the moderate investment activity, which also characterised the pre-crisis period. It is easy to explain that amidst the uncertainties of the crisis, liquidity demands soared and investors refrained from investments requiring a long-term financial commitment.<sup>24</sup> On the other hand, it was already observed before the crisis that companies – primarily large enterprises – had substantial liquid assets and corporate savings,<sup>25</sup> as they used a decreasing portion of their profits for capital investments, i.e. for the development of their own physical and human capacities, and for R&D activities. Instead, they **used an increasingly large portion of their funds for financial market activities**, the payment of shareholder dividends, and the amounts used for share buy-backs, serving as remuneration for the corporate managers, reached unprecedented heights.<sup>26</sup>

For example, in the USA large enterprises account for about eighty per cent of private investments, while small and medium-sized enterprises – in the case of which the shortage of financial funds may be justified – accounted for only the remaining part thereof.<sup>27</sup> This confirms that the **shortage of financial funds alone** does not explain either the moderate development of innovations or the **decelerating investments**.

In the past, research results on the **financial structure** of modern corporations, and the connection between the **financial structure and investment, employment and research and development activity** were rarely presented in the macroeconomic literature – these

remained within the mostly microeconomic approaches of the financial markets and corporate finance. These treated the financial sector, as well as corporate finance only as a “veil”, which facilitate the optimal allocation of the available (treated as real) scarce resources. It is not possible to present the literature in detail, and thus we highlight only two aspects thereof relevant for the debates on secular stagnation.

### 1.5.1 FINANCIAL CONDITION OF LARGE CORPORATIONS

Over past decades, substantial changes have occurred in the financing structure and managerial incentives of large corporations, which account for the bulk of private sector investments. The “managerial” corporations, which were typical in the decades that followed World War II, gradually gave way to large corporations managed in the spirit of “**shareholder value**”. The ownership (shareholders) and the actual governance (management) of the company was already separated in the case of the managerial corporations as well; the literature analysed this relationship as an “agent – principal” relation.<sup>28</sup> The key question was what ensured that the corporate managers, being better informed than the owners holding small shares (who may be more interested in accumulating internal reserves and increasing the size of the company than in enhancing efficiency, etc.) would represent the interest of the owners in their business decisions (e.g. on investment, financing and profit sharing issues). The practice according to which

<sup>24</sup> Mason (2015), p. 4.

<sup>25</sup> IMF (2006). The analysis added that in 2003-2004 the G7 countries’ corporate savings were twice as high as the current account surplus accumulated by the less developed countries toward them, which represented a “paradox” capital flow from the less developed toward the developed. On the current liquidity situation, see Tett (2015) and the report underlying the paper: Association for Financial Professionals (2015). According to this, the European large enterprises hold liquid assets of about EUR 1.1 trillion at very low yields in the banking sector, which roughly corresponds to the additional liquidity that ECB intends to provide for the stimulation of the economy until autumn 2016 within the framework of its asset purchase programme.

<sup>26</sup> Lazonick (2014a and 2014b), Mazzucato and Wray (2015). 449 companies, belonging to S&P 500 and listed on the stock exchange between 2003 and 2012, used 54 per cent of their total profit for share buy-backs on the open markets and 37 per cent for dividend payment. Thus, not too much profit was left for the financing of the developments.

<sup>27</sup> Mason (2015), p. 2.

<sup>28</sup> Berle and Means (1932).

**managers' remuneration was tied to an increasing degree to the share price of the companies managed by them**, thereby bringing the owners' and the management's interest close to each other, started to spread from the 1970s. This assumed that the stock exchanges properly value the companies, duly appreciate the investment decisions made in the interest of the company's long-term viability and – not least – profitability, which requires the company to subordinate its own profit and the external resources (share, bond and bank loan financing) to this goal to the maximum. Since the long-term viability of the company is not only in the interest of the owner, but also of the employees, suppliers and clients, it was assumed that everybody else, whose welfare was impacted by the company – i.e. the “stakeholders” – were also interested in the increase of the share price. The stock exchange undervalues the management that underperforms in this respect, and other companies will buy out the enterprise and replace the old management with a more competent one.<sup>29</sup>

Heated debates started already in the 1980s as to what degree these interests indeed coincide in reality. The debate was about the notion of assumed “**short-termism**”. According to the critics, the stock exchanges do not sufficiently value the developments that entail long-term commitment, but in the short run promise little dividend and price gain. They set **short-term financial profitability requirements** that preclude the implementation of such, otherwise desirable, strategies or make it extremely difficult. In the wake of the crisis, the debate once again became heated and – particularly in the USA and the United Kingdom – with many arguing for corporate governance and corporate finance structures that attach more importance to stakeholders' interests rather than to shareholder value.<sup>30</sup>

Critics had already pointed out before the crisis that today's shareholders – especially in the Anglo-Saxon world, but also in an increasing number of other countries – are only “portfolio owners” of large enterprises. That is, their welfare is not linked to a single company. They are interested in **increasing the value of their portfolio** rather than in the long-term stability of a single company. This can also be achieved by holding the shares of each company only as long as they pay dividends, and pulling out when their future becomes uncertain. That is, in this respect there is no

guarantee that the maximisation of shareholder value coincides with the long-term growth of the company and generally of the economies.

**William Lazonick**, one of the earliest critics of the shareholder value approach, demonstrated using data that the financial incentives of the management by equity options **did not strengthen the long-term approach**.<sup>31</sup> Quite the contrary, the management has numerous possibilities to influence the equity price of its own company with methods that might as well conflict with the long-term interests of the company. According to the analysis performed with regard to the USA, to a large extent the shares financed the retirement of the managers, but did not contribute to the increase of investments.

This year's OECD report on the corporate outlooks dedicated a separate chapter to this topic.<sup>32</sup> It notes that, in theory, the “active shareholders” – that is the “impatient” investors expecting continuous profitability – naturally often play a positive role by specifying requirements for the corporate management, which often acts too leisurely and is unable to grab business opportunities. However, in some of the cases these same active shareholders may set with **their yield expectations a “hurdle rate” for the management**, who – in an environment characterised by such low financing costs as today – are willing to submit to short-term pressure and pay dividends even from loans. The OECD helps the understanding of this by a mechanism equivalent to increasing the effective risk premium. It demonstrates that a large part of the companies' operating cash flow is used for share buy-backs instead of investments, which is one form of remunerating the shareholders (including also the management) (Chart 1-10).

Mason shows that before the crisis US companies **borrowed for financing shareholders (dividends and buy-backs) rather than for investments**. Borrowing declined during the crisis, which was accompanied by reduced dividend payments and buy-backs, but not by a downturn in investments. Based on the longer time series, the link was stronger between profits, fluctuating together with the cycle, and investments, but this link weakened over time. In the last cycles the profit increased, but investments decelerated. In parallel with this, dividend payments were stable,

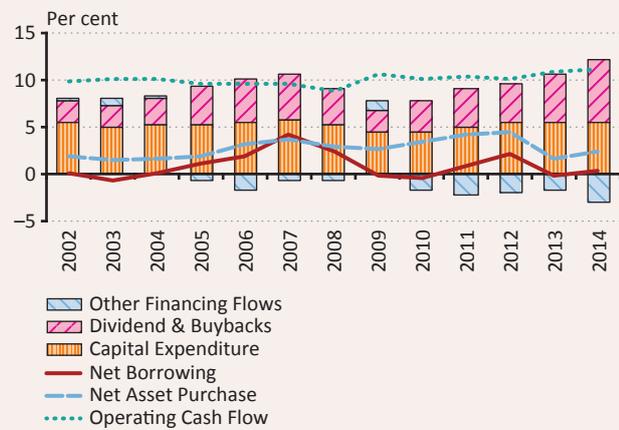
<sup>29</sup> The so-called “market for corporate control” mechanism. See Jensen (1991).

<sup>30</sup> Recently the chief economist of the Bank of England has also dealt with the issue in several presentations and supported the development of the mechanisms that enforce the stakeholders' interests better. See for example Haldane (2015).

<sup>31</sup> Lazonick (1991; 2015)

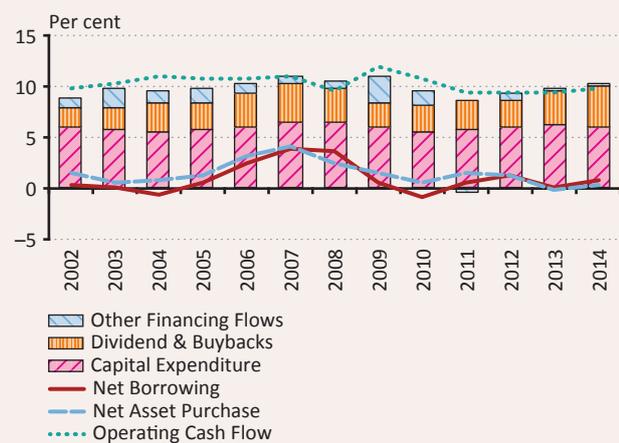
<sup>32</sup> OECD (2015), Short-termism: the cash-flow, CAPEX and buyback puzzle, p. 44.

**Chart 1-10**  
US companies: Operating cash is rising and buy-backs are huge



Source: OECD (2015)

**Chart 1-11**  
European industrial corporations' expenditures and liabilities, per cent of net sales



Source: OECD (2015)

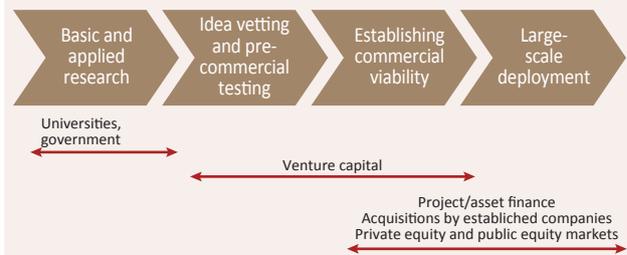
indifferent to the cycles and low for a long time. In recent years, dividend payments soared and at the end of the time series they even exceeded investments. Lending in the previous decades was stable, but it gradually became increasingly cyclical and from time to time it even fully disappeared at the trough of the cycle. Recently its parallel movement with the dividend payments has been strengthening. Mason drew the conclusion that **even if large enterprises eventually have problems with providing the necessary funding it is due to the fact that too much funds flow out of the company – and to a lesser extent for investments – rather than to the low inflow of funds.**

## 1.5.2 FINANCING INNOVATIONS

With the change in the financial structure, the financing of innovations has also undergone transformation. **Venture capital** companies, which play an important role in financing innovations in the USA, **are less and less** willing to undertake the **financing** of research projects in the **early phase** and rather limit their support to the less risky phases that are closer to market entry<sup>33</sup> (Chart 1-12 and 1-13).

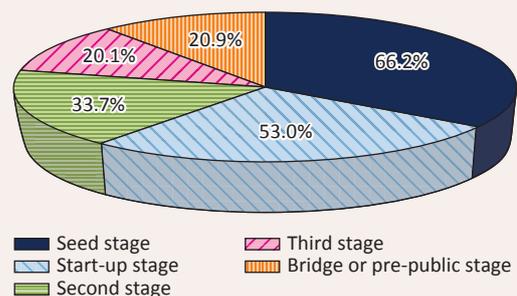
Thus, the **state must play an increasing role** in financing innovations and determining the direction of R&D (see Charts 1-14 and 1-15, for the distribution of resources available for basic research and R&D). However, in the

**Chart 1-12**  
Stages of venture capital investment



Source: Mazzucato (2011), p. 40.

**Chart 1-13**  
Risk of loss for different stages at which investments are made



Source: Mazzucato (2011), p. 40

developed countries the state development banks have been gradually closed down or restricted in their activities. In times of fiscal adjustments, R&D and other investments that influence long-term competitiveness are often cut back. Despite possessing abundant resources, the private sector does not undertake the

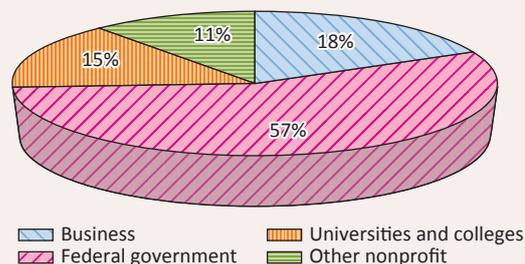
<sup>33</sup> Mazzucato and Wray (2015)

financing of the riskiest phases to the same degree as in previous decades. In several studies, Mazzucato presented that the states – particularly the USA – played a defining role in and provided considerable funds for the development of innovative products of high success.<sup>34</sup> However, when certain products become successful on the market the states receive a relatively low share from the financial results, as the profit remains in the private sector. Successful companies are often able to minimise their tax burdens. These changes contribute to the accumulation of less development funds than necessary, as both the companies and the states fail to reinvest a sufficiently high part of the former innovations' market utilisation result in the new basic research.

Mazzucato et al. propose changes that would ensure the availability of **stable and patient financial resources in the required volume** to guarantee the financing of basic research. She believes that the state has a dominant role, as the markets are unable to provide this stability and do not take responsibility for the uncertainties accompanying basic research. However, in lieu of this it must be ensured that when the private sector realises profit from the market utilisation, the state – which facilitates this – receives a higher share from that. The state not only needs to adjust the market failures, as suggested by the mainstream recommendations, but it should also create these markets or at least make a substantial contribution to the creation of those. A capable state can shape the course of innovations and the future development directions by transformative interventions, and divert the efforts to a socially desirable direction that mitigates the social inequalities and environmental damages.

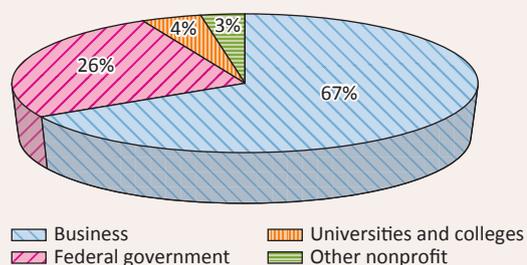
The lessons learnt from the financial structural changes that work in the long run are as follows: Deregulation, liberalisation and privatisation were expected to facilitate the optimal allocation of resources and financial risks; by increasing competition and decreasing the funding costs it strengthens the compulsion to increase competitiveness and investments. However, in retrospect, it is clear that **financial liberalisation alone, without the proper adjustment of macroeconomic policy**, entails severe risks and contributed to the major financial crisis.<sup>35</sup> These processes – which are most advanced in the USA, but also characterise other

**Chart 1-14**  
Sources of funding for basic research in 2008



Source: Mazzucato (2011), p. 52

**Chart 1-15**  
Sources of funding for US R&D in 2008



Source: Mazzucato (2011), p. 51

developed regions – commenced several decades earlier, with the gradual spread of financial deregulation and liberalisation, and peaked before the crisis. Simultaneously with these micro-level changes, at the macro level the financial cycles, which from time to time deepened to become overt crises and characterised the economies before World War II, returned.<sup>36</sup>

Many attributed the falling growth rate in the advanced economies to this transformation.<sup>37</sup> The large enterprise sector still has very substantial liquid funds, while investment activity falls short of even the pre-crisis level.<sup>38</sup> However, this can only partially be blamed on balance sheet adjustment, as it was typical beforehand as well, albeit its degree increased during the crisis, due to the uncertainty. At the same time, they also disagree with the opinion of economists fearing secular stagnation, as they believe that economic policy can do more than suggested by them. **In the interest of faster, more sustainable growth they propose structural changes that may create "patient" financing for basic research, as well as for the**

<sup>34</sup> This particularly applies to those products of global success the market entry of which helped the most innovative companies, such as Google, Amazon, Apple or Facebook, join the largest and richest companies.

<sup>35</sup> Cecchetti et al (2015), Cournède et al. (2015). Zingales dedicated his presidential speech of this year to the same topic at the meeting of the American Finance Association. Zingales (2015).

<sup>36</sup> Aglietta (1995), Borio and Disyatat (2002), Borio (2012).

<sup>37</sup> See, for example Lazonic (2014a), and Mazzucato and Penna (2014).

<sup>38</sup> IMF (2015b).

development of these ideas into market products and introducing them to the market, in which the state must play a dominant role. The profit of the enterprises should come from the core activity, and the incentive system of the corporate managers should be transformed such that encourages behaviour that results in

sustainable, rapid growth. Finally, macroeconomic policy must ensure a stable environment – by coordinating monetary, macroprudential and fiscal policies – to reduce the negative impacts of the financial cycles and manage the consequences of excessive inequalities, as necessary.

## REFERENCES

- AGLIETTA, M. (2005): *Macroéconomie Financière*, Editions La Decouverte, Paris, (first edition, 1995)
- ASSOCIATION FOR FINANCIAL PROFESSIONALS (2015): *AFP 2015 Liquidity Survey Report*  
<http://www.afponline.org/press/2015-AFP-Liquidity-Report/>
- BERLE, A. and G. MEANS (1932): *The Modern Corporation and Private Property* (2nd edn Harcourt, Brace and World, New York 1967). ISBN 0-88738-887-6
- BERNANKE, B. (2015a): *Why are interest rates so low, part 2: Secular stagnation*, March  
<http://www.brookings.edu/blogs/ben-bernanke/posts/2015/03/31-why-interest-rates-low-secular-stagnation>
- BERNANKE, B. (2015b): *Why are interest rates so low, part 3: The Global Savings Glut*  
<http://www.brookings.edu/blogs/ben-bernanke/posts/2015/04/01-why-interest-rates-low-global-savings-glut>
- BOSSONE, BIAGIO (2014): *Secular Stagnation*, Economics Discussion Papers, No 2014-47, Kiel Institute for the World Economy  
<http://www.economics-ejournal.org/economics/discussionpapers/2014-47>
- BIS (2014): *84th Annual Report*  
<http://www.bis.org/publ/arpdf/ar2014e.htm>
- (2015): *85th Annual Report*  
[www.bis.org/publ/arpdf/ar2015e.htm](http://www.bis.org/publ/arpdf/ar2015e.htm)
- BLANCHARD, O. (2015): *An assessment of the state of the world economy*, WEO Press Conference, May,  
<http://www.voxeu.org/print/58898>
- BORIO, C. (2015): *On the centrality of the current account in international economics*, Keynote speech at the ECB-Central Bank of Turkey conference “Balanced and sustainable growth – operationalising the G20 framework”  
<http://www.bis.org/speeches/sp150828.pdf>
- BORIO, C. and P. DISYATAT (2011): “Global imbalances and the financial crisis: Link or no link?”, BIS Working Papers, no 346, June  
<http://www.bis.org/publ/work346.pdf>
- (2014): “Low interest rates and secular stagnation: Is debt a missing link?”, Vox EU, 25 June.  
<http://www.voxeu.org/article/low-interest-rates-secular-stagnation-and-debt>
- BRYANT, C. and C. JONES (2015): “ECB Quantitative Easing. Failure to Spark”, *Financial Times*, 7 September,  
<http://www.ft.com/intl/cms/s/0/619b139c-3ce4-11e5-8613-7d16aad2152.html?ftcamp=published-links%2Frss%2Fbrussels%2Ffeed%2F%2Fproduct#axzz3l2E5rsZE>
- BULLARD, J. (2014): *Income Inequality and Monetary Policy: A Framework with Answers to Three Questions*,  
[https://research.stlouisfed.org/econ/bullard/pdf/Bullard\\_CFR\\_26June2014\\_Final.pdf](https://research.stlouisfed.org/econ/bullard/pdf/Bullard_CFR_26June2014_Final.pdf)
- CECCHETTI, S.G. and E. KHARROUBI (2015): *Why does financial sector growth crowd out real economic growth?* BIS Working Papers No. 490.  
[www.bis.org/publ/work490.htm](http://www.bis.org/publ/work490.htm)
- COURNÈDE, B., O. Denk, P. Hoeller (2015): *Finance and Inclusive Growth*, OECD Economic Papers, No. 14  
[http://www.oecd-ilibrary.org/economics/finance-and-inclusive-growth\\_5js06pbhf28s-en;jsessionid=4h2jppbvo5qgf.x-oecd-live-03](http://www.oecd-ilibrary.org/economics/finance-and-inclusive-growth_5js06pbhf28s-en;jsessionid=4h2jppbvo5qgf.x-oecd-live-03)
- CŒURÉ, B. (2013): *Savers aren’t losing out. Opinion piece by Benoît Cœuré, Member of the Executive Board of the ECB*, published on the Handelsblatt on 11 November 2013  
<http://www.ecb.europa.eu/press/key/date/2013/html/sp131111.en.html>

- EGGERTSON, G. and MEHROTRA (2014): *A Model of Secular Stagnation*, NBER Working Paper No. 20574 <http://www.nber.org/papers/w20574.pdf>
- EICHENGREEN, B. (2015): "Secular Stagnation: The Long View", *American Economic Review: Papers & Proceedings* 2015, 105(5): 66–70 <http://dx.doi.org/10.1257/aer.p20151104>
- HANSEN, A.H. (1939): "Economic Progress and Declining Population Growth", *American Economic Review*, March 1939, 29(1), pp. 1–15 [http://www.jstor.org/stable/1806983?seq=5#page\\_scan\\_tab\\_contents](http://www.jstor.org/stable/1806983?seq=5#page_scan_tab_contents).
- HAUSMANN, R. (2015): "Secular Stagnation for Free", *Project Syndicate*, 27th May <http://www.project-syndicate.org/commentary/economic-stagnation-free-products-by-ricardo-hausmann-2015-03#RmhH5FleQVQAoKGj.99>
- FELIPE, J. and J. MCCOMBIE (2010): "On Accounting Identities, Simulation Experiences and Aggregate Production Functions. A Cautionary Tale for (Neoclassical) Growth Theorists", CCEPP WP01-10, in: M. Setterfield, (ed.), *Handbook of Alternative Theories of Economic Growth*, Cheltenham: Edward Elgar, 189–208. [http://www.landecon.cam.ac.uk/research/real-estate-and-urban-analysis/centres/ccepp/copy\\_of\\_ccepp\\_publications/wp01-10.pdf](http://www.landecon.cam.ac.uk/research/real-estate-and-urban-analysis/centres/ccepp/copy_of_ccepp_publications/wp01-10.pdf)
- HALDANE, A. (2015): *Who owns a company?* Speech Given at the University of Edinburgh Corporate Finance Conference on Friday, 22 May 2015 <http://www.bankofengland.co.uk/publications/Pages/speeches/2015/833.aspx>
- IMF (2006): "Awash with Cash: Why are corporate savings so high?", *World Economic Outlook*, Spring Chapter IV <http://www.imf.org/external/pubs/ft/weo/2006/01/pdf/c4.pdf>
- IMF (2015a): "Lower Potential Growth: A New Reality", in: *World Economic Outlook*, Ch. 3. IMF, Washington <http://www.imf.org/external/pubs/ft/weo/2015/01/> <http://www.imf.org/external/pubs/ft/weo/2015/01/pdf/c3.pdf>
- IMF (2015b): "Private Investment: What's Hold Up?" in: *World Economic Outlook*, Ch. (4). IMF, Washington <http://www.imf.org/external/pubs/ft/weo/2015/01/>
- JENSEN, M. C. (1991): "Corporate Control and the Politics of Finance" (Summer 1991). *Journal of Applied Corporate Finance*, Vol. 4, No. 2, pp. 13–33, Summer <http://dx.doi.org/10.2139/ssrn.350421>
- KOO, R. (2014): *Balance sheet recession is the reason for secular stagnation*, in *Secular Stagnation: Facts, Causes and Cures*, VOX.EU.org ebook [http://www.voxeu.org/sites/default/files/Vox\\_secular\\_stagnation.pdf](http://www.voxeu.org/sites/default/files/Vox_secular_stagnation.pdf)
- LAZONICK, W. (1992): "Controlling the Market for Corporate Control: The historical significance of the managerial capitalism", *Industrial and Corporate Change*, (1992) 1 (3): 445–488. doi: 10.1093/icc/1.3.445, or: <http://web.uconn.edu/ciom/CorpControl92.pdf>
- (2014a): "Profits without prosperity", *Harvard Business Review*, September <https://hbr.org/2014/09/profits-without-prosperity>
- (2014b): "What Apple should do with its profit", *Harvard Business Review*, October <https://hbr.org/2014/10/what-apple-should-do-with-its-massive-piles-of-money>
- (2015): *Share buybacks: From retain-and-reinvest to downsize-and-distribute*, Brookings Center for Effective Public Management, April <http://www.brookings.edu/research/papers/2015/04/17-stock-buybacks-lazonick>
- MANKIW, G. (2013): "Defending the One Percent", *Journal of Economic Perspectives*, 27(3): 21–34. <https://www.aeaweb.org/articles.php?doi=10.1257/jep.27.3.21>
- MASON, J. (2015): *Disgorge the Cash, The Disconnect Between Corporate Borrowing and Investment*, Roosevelt Institute, February [http://rooseveltinstitute.org/sites/all/files/Mason\\_Disgorge\\_the\\_Cash.pdf](http://rooseveltinstitute.org/sites/all/files/Mason_Disgorge_the_Cash.pdf)
- MAZZUCATO, M. (2011): *The Entrepreneurial State*, Demos [http://www.demos.co.uk/files/Entrepreneurial\\_State\\_-\\_web.pdf](http://www.demos.co.uk/files/Entrepreneurial_State_-_web.pdf)
- MAZZUCATO, M. and C. PENNA (2014a): *Mission-Oriented Finance for Innovation: New ideas for investment-led growth* <http://missionorientedfinance.com/>
- MAZZUCATO, M. and C. PEREZ (2014b): *Innovation as Growth Policy: The Challenge for Europe*, University of Sussex, SWPS 2014–13

- MAZZUCATO, M. and R. WRAY (2015): *Financing the Capital Development of the Economy: A Keynes-Schumpeter-Minsky Synthesis*, Jerome Levy Institute of the Bard College, Working Paper No. 837, May [http://www.levyinstitute.org/pubs/wp\\_837.pdf](http://www.levyinstitute.org/pubs/wp_837.pdf)
- MNB (2014): *Growth Report*, Chapter 1 <http://www.mnb.hu/Kiadvanyok/novekedesi-jelentes>
- NEALY M., A. RADIA AND R. THOMASS (2014): "Money Creation in the modern economy", *Bank of England Quarterly Bulletin*, Q1, 1–14. o. <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q1prerelease/moneycreation.pdf>
- OECD (2015): *Business and Finance Outlook 2015* [http://www.oecd-ilibrary.org/finance-and-investment/oecd-business-and-finance-outlook-2015\\_9789264234291-en](http://www.oecd-ilibrary.org/finance-and-investment/oecd-business-and-finance-outlook-2015_9789264234291-en)
- PICHELMANN, K. (2015): *When 'Secular Stagnation' meets Piketty's capitalism in the 21st century. Growth and inequality trends in Europe reconsidered*, Economic Papers No. 551, European Commission Directorate-General for Economic and Financial Affairs [http://ec.europa.eu/economy\\_finance/publications/economic\\_paper/2015/ecp551\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_paper/2015/ecp551_en.htm)
- PIKETTY, T. (2013). *Le capital au 21e siècle*, Editions du Seuil – Septembre, in English (2014): *Capital in the 21st century*, <http://piketty.pse.ens.fr/fr/capital21c>, in Hungarian: A tőke a 21. században, Kossuth kiadó, Budapest
- PISANI-FERRY, J. (2015): *What to Make of Productivity Paradoxes*, Caixin online, 10th August <http://english.caixin.com/2015-08-07/100837558.html>
- Rodrik, D. (2015): "Premature Deindustrialization," NBER Working Paper No. 20935, February 2015, <http://www.nber.org/papers/w20935>. (Blog post: *Perils of premature deindustrialisation*, Project Syndicate, 11 October, 2013 <http://www.project-syndicate.org/commentary/dani-rodrikdeveloping-economies--missing-manufacturing>, or [http://rodrik.typepad.com/dani\\_rodriks\\_weblog/2015/02/premature-deindustrialization-in-the-developing-world.html](http://rodrik.typepad.com/dani_rodriks_weblog/2015/02/premature-deindustrialization-in-the-developing-world.html))
- ROGOFF, K. (2015): *Debt supercycle, not secular stagnation* <http://www.voxeu.org/article/debt-supercycle-not-secular-stagnation>
- SUMMERS, L.H. (2014): "U. S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", *Business Economics*, Vol. 49. No. 2., February <http://larrysummers.com/wp-content/uploads/2014/06/NABE-speech-Lawrence-H.-Summers1.pdf>
- (2015). *The Fed looks set to make a dangerous mistake*, 23 August <http://larrysummers.com/2015/08/23/the-fed-looks-set-to-make-a-dangerous-mistake/>
- SZALAI, Z. (2014): *Globális pénzügyi válság és kilábalás: beruházások és megtakarítások (Global financial crisis and recovery: investments and savings)* [http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/szakmai\\_cikkek/befektetesek\\_megtakaritasok/Szalai\\_Zoltan\\_Globalis\\_penzugyi\\_valsga\\_es\\_kilabalas\\_beruhazasok\\_es\\_megtakaritasok.pdf](http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/szakmai_cikkek/befektetesek_megtakaritasok/Szalai_Zoltan_Globalis_penzugyi_valsga_es_kilabalas_beruhazasok_es_megtakaritasok.pdf)
- TEULINGS, C. and R. BALDWIN (eds, 2014): *Secular Stagnation: Facts, Causes and Cures*, VOX.EU.org ebook [http://www.voxeu.org/sites/default/files/Vox\\_secular\\_stagnation.pdf](http://www.voxeu.org/sites/default/files/Vox_secular_stagnation.pdf)
- TETT, G. (2015): "The US economy is infested with zombie corporate cash", *Financial Times*, 13rd August, [http://www.ft.com/intl/cms/s/0/00f5849e-41b4-11e5-b98b-87c7270955cf.html?ftcamp=published\\_links%2Frs%2Fmarkets\\_gillian-tett%2Ffeed%2F%2Fproduct#axzz3jzW0CUK1](http://www.ft.com/intl/cms/s/0/00f5849e-41b4-11e5-b98b-87c7270955cf.html?ftcamp=published_links%2Frs%2Fmarkets_gillian-tett%2Ffeed%2F%2Fproduct#axzz3jzW0CUK1)
- TILY, G. (2012): "Keynes' Monetary Theory of Interest", in: *Threat of Fiscal Dominance?*, BIS Papers, No. 65., May, pp. 51–81 [http://www.bis.org/publ/bppdf/bispap65c\\_rh.pdf](http://www.bis.org/publ/bppdf/bispap65c_rh.pdf)
- (2015). "US Council of Economic Advisers gets dynamics of long-term interest rate wrong", *Prime Economics blog*, 2 September <http://www.primeeconomics.org/articles/dynamics-of-the-long-term-rate-of-interest-the-us-council-of-economic-advisers-gets-it-wrong>
- TURNER, A. (2014): "Is A Shrinking Population Always A Bad Thing?", *The Project Syndicate*, 24th August <http://www.socialeurope.eu/2014/08/shrinking-population-always-bad-thing/>
- (2015): "The Real Demographic Challenge", *The Project Syndicate*, 21th August <http://www.project-syndicate.org/print/demographic-challenge-poor-countries-by-adair-turner-2015-08>

## 2 Quantitative and qualitative conditions of the labour market

*In the pre-crisis years, one of the most acute structural problems of the Hungarian economy was the low labour market activity and employment, which restrained the economy's growth potential. As a result of the reforms introduced since the crisis, the labour force participation rate has increased considerably, but remains low by international standards. Looking ahead, the development of the quantitative and qualitative labour market conditions is of key importance for economic growth.*

*Human capital affects economic growth via two channels; on the one hand, through the available labour force, on the other hand, through the education level of employees. Based on various population forecasts, in the coming decades the role of the qualitative attributes of labour force may gain importance due to population ageing. A qualified labour force enhances economic growth through higher productivity. In addition, a further increase in labour market participation by groups that are currently characterised by lower participation rates may also reduce the long-term growth impacts arising from demographic processes.*

*Based on population projections, in the coming decades ageing may continue in Hungary as well, in line with the global trends, and the extent thereof may slightly exceed the EU average. As regards the labour market, the most important demographic change may be the significant drop in the working-age population. Demographic changes may be an increasingly strong labour supply challenge over the long run. The impact of demographic changes can be offset by improving the qualitative attributes of the labour force and a further increase in the labour market participation of groups characterised by low labour force participation rate.*

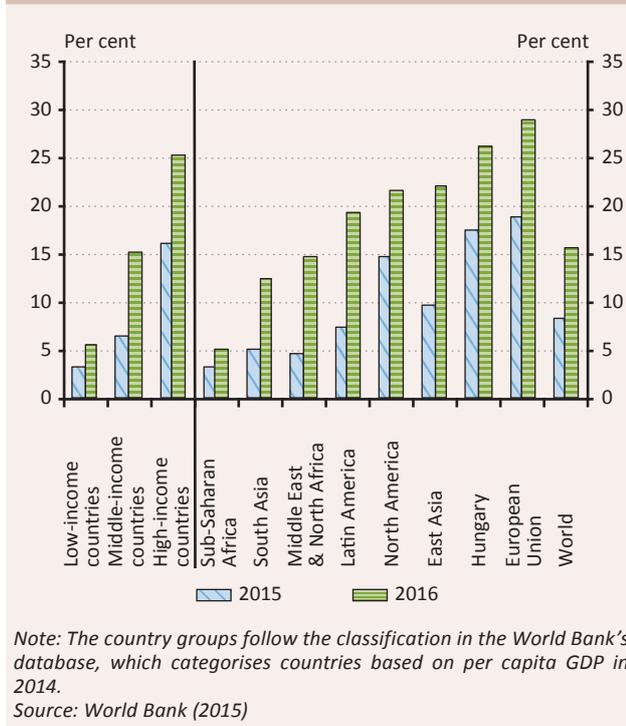
*In past years, the participation rate has increased the most in Hungary among the Visegrád countries, but by international standards it has been low for a long time. The increase in labour supply was a general process in Hungary, and the shortfall in participation can be linked primarily to a few, partially overlapping, social groups. By international standards, the activity rate of the highly qualified is still low. In addition to the demographic composition, the low participation rate is also attributable to differences in education.*

*The qualitative features of the labour supply can best be captured by the education level of employees. Since the millennium, the ratio of persons with a university or college degree has risen significantly in Hungary. The ratio essentially corresponds to the average value of the Visegrád countries, but lags behind the EU average and the average for more developed countries. However, there are significant differences between the regions of Hungary in terms of the education level. In the coming decades, as a result of the technological progress, the labour demand for those holding a degree in technical and natural sciences – the areas where Hungary lags behind the Visegrád countries – may further increase. Besides the ratio of persons with a university or college degree, the number of those finishing vocational school in the secondary school system also shows a shortfall compared to other European countries. On the supply side of the labour market, the largest supply is in employees with secondary school education. Based on the results of international surveys, the average test results of students lagged behind the OECD average in the past period, which implies that the quality of public education should be further improved. The quality of public education is characterised by a dichotomy. The best performing schools are concentrated in the capital city. Finally, besides knowledge acquired in education, the health condition of the population is also the part of human capital. In the past decades, life expectancy has gradually increased in Hungary, but it is still lower than the value corresponding to the country's level of economic development.*

## 2.1 Demographic processes

**Population ageing – which is essentially a global trend – is one of the most significant challenges of the global economy.** The pace of ageing may be the highest in the medium-income countries, where the ratio of the elderly people within the population may double compared to the current value by 2050. The extent of ageing may be the most significant in the high-income countries: by 2050 the ratio of the people over 65 may increase to 25 per cent of the population. In the coming decades, of the regions of the world the degree of the demographic changes may be the most significant in the European Union: by 2050 the ratio of the elderly people may approximate 30 per cent, i.e. twice as high as the 15 per cent value estimated for the countries of the world (Chart 2-1). Based on various population forecasts, in the next decades the population ageing may continue in Hungary as well similarly to the European trends.

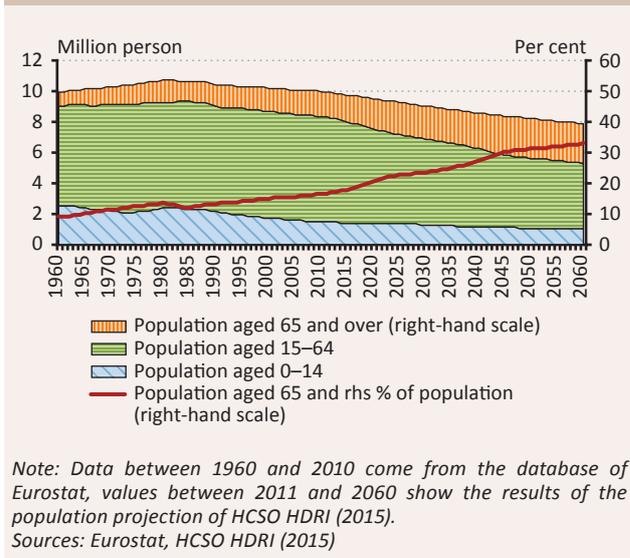
**Chart 2-1**  
Ratio of those over 65 within the population in the various country groups of the world



### 2.1.1 DEMOGRAPHIC DEVELOPMENTS IN HUNGARY

**Quantitative labour market conditions are determined to a great extent by demographic processes, that is the development of the number and age composition of the population.** In Hungary, the size of the population has been decreasing and the population has been gradually ageing since 1980 (Chart 2-2).

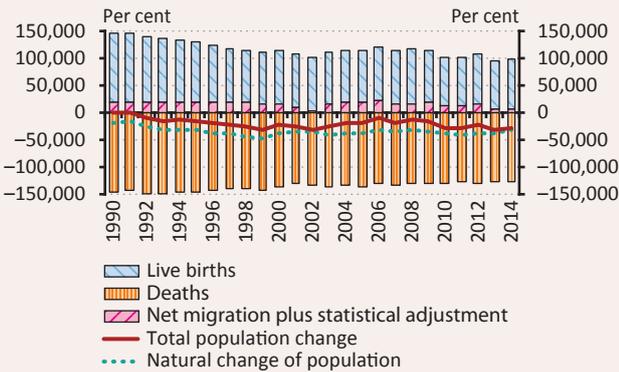
**Chart 2-2**  
Distribution of the Hungarian population by age groups, 1960–2060



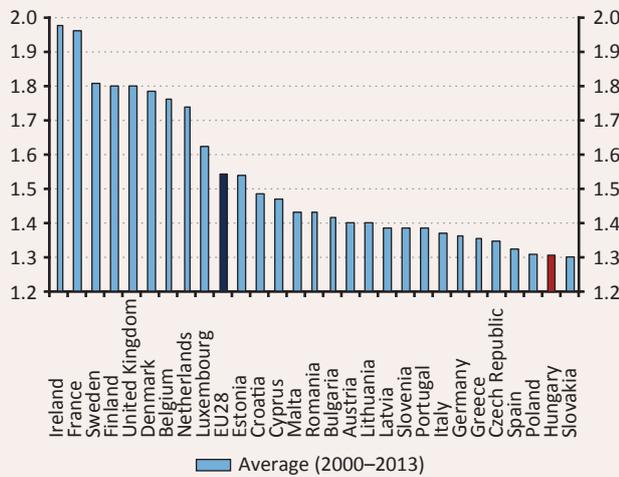
**One of the main reasons for the population decline is the lower birth rate than in previous decades.** Between 1990 and 2010, the population of Hungary decreased by 360,000. Although as a result of the gradual increase in life expectancy, the annual mortality rate decreased, the birth rate declined to an even larger extent in the past two decades. Consequently, the number of births is unable to offset the population decline attributable to mortality, and thus in recent years as a result of the natural population decline Hungary's population

decreased on average by 35,000 persons annually (Chart 2-3). According to Eurostat data, the impact of this was partially offset by the positive balance of net migration, but even taking this into account the annual extent of population decline in Hungary is still significant.

**Chart 2-3**  
Decomposition of the change of the Hungarian population, 1990–2014



**Chart 2-4**  
Developments of total fertility rates in the countries of the European Union, 2000–2013

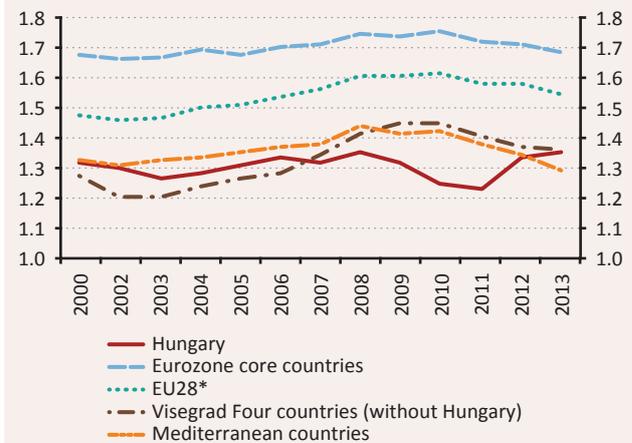


**The change in the age structure is characterised by population ageing.** Within the population both the young population (0–14 years) and the group of 15–64 years – relevant for the labour market – is decreasing (Chart 2-2), while the ratio of the group of 65 and older is increasing within the population. Population ageing is attributable to two processes: the low birth rate and the gradual increase of life expectancy. The birth rate, which is lower than that observed in the previous decades, results in a smaller young generation compared to the older generation

and it also reduces the future number of women of child-bearing age, while due to higher life expectancy members of the older generation live longer.

**In Hungary, the total fertility rate is extremely low in a European comparison.** Since the millennium the fertility rate in Hungary has fluctuated between 1.23 and 1.35, but despite the rising trend observed in recent years it still falls significantly short of the value of 2.1, necessary for long-term reproduction. In a European comparison, the Hungarian ratio is one of the lowest values Chart (2-4). Although the latest figure from 2013 represents the highest value since the millennium (1.35), based on this Hungary ranks only 22nd among the 28 EU member states. Within the European Union, the fertility rate shows a great variance: it is around 2 in Ireland and France, while in the Visegrád countries and in the South European states it was around 1.3–1.4 in recent years (Chart 2-5). Taken together, the European fertility rate is the lowest among the world’s regions.

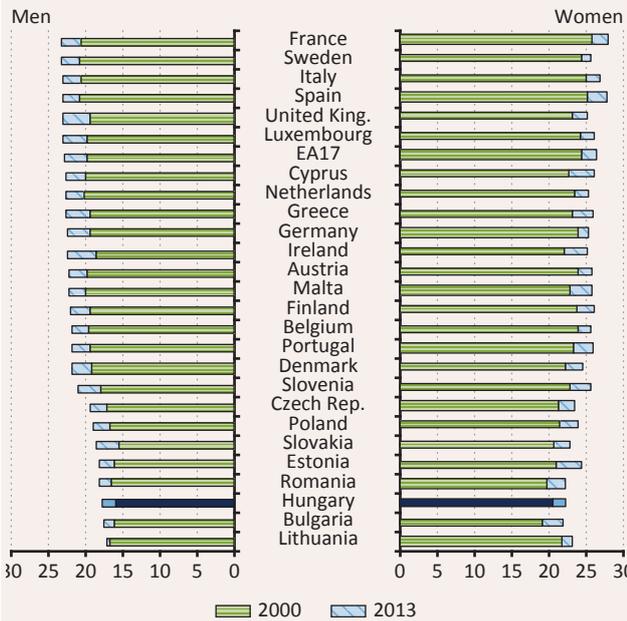
**Chart 2-5**  
Development of total fertility rate in certain country groups, 2000–2013



Note: \* Data for 2000 refers to EU27 countries. The Mediterranean countries contain Greece, Italy, Portugal and Spain. Eurozone core countries includes Austria, Belgium, Finland, France, Netherlands, Ireland, Luxembourg and Germany.  
Source: Eurostat

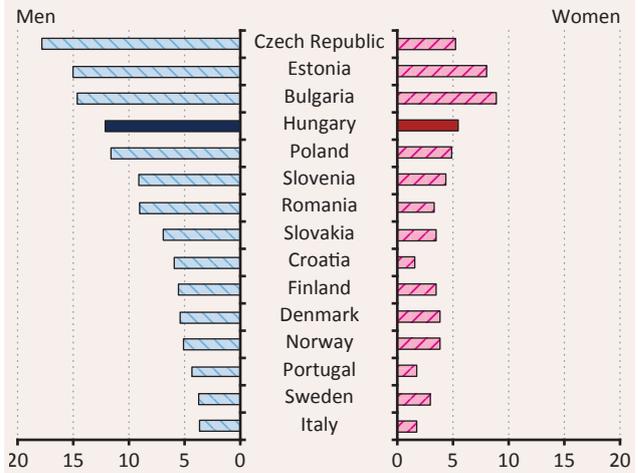
**Life expectancy has increased slightly in Hungary since the millennium, but the level and rate of increase is still low in a European comparison** (Chart 2-6). In 2013, at the age of 60 the life expectancy was on average 24 years in the EU countries, while the value in Hungary (20 years) was one of the lowest in the EU. Since the millennium the life expectancy of women and men at the age of 60 increased equally in Hungary, thus the difference in the life expectancy of the genders did not decrease.

**Chart 2-6**  
Life expectancy at age 60 in the countries of the European Union in 2000 and in 2013



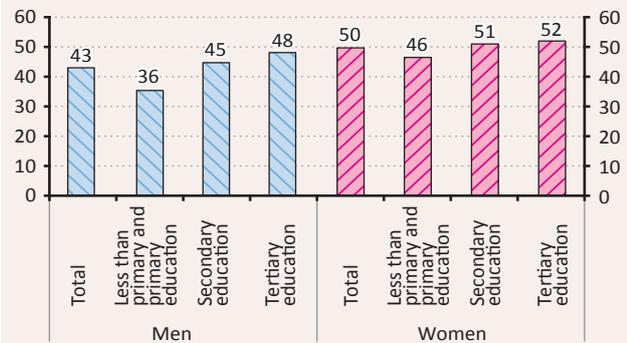
Source: Eurostat

**Chart 2-8**  
Difference between the life expectancy of persons with tertiary education and secondary education at age 30, 2012



Source: Eurostat

**Chart 2-7**  
Life expectancy at age 30 by educational attainment in Hungary, 2012



Source: Eurostat

**Life expectancy varies greatly between groups with different education levels:** the life expectancy of men with higher education degree at the age of 30 on average exceeds the life expectancy of those with primary education by 12 years in Hungary (Chart 2-7). A difference of similar magnitude may only be observed in the Central and Eastern European countries, while in the more developed Western European member states there is no significant difference in the life expectancy of the groups with different education level (Chart 2-8).

## 2.1.2 EXPECTED DEVELOPMENT OF DEMOGRAPHIC PROCESSES

The future development of the population and its age composition is determined by the fertility rate and life expectancy, as well as by the balance of net migration. Regarding the Hungarian population several projections are available, which estimate the expected processes in line with different assumptions.

**Based on projections for the future development of the Hungarian population, in the coming decades the size of the population may decline further and ageing may accelerate.** Based on certain projections, the size of the population in 2060 may be in the range of 6.7 to 9.2 million (Table 2-1). The basic version of the HCSO HDRI (2015) and the UN projections (UN 2015) both show a population number of 7.9 million for 2060, thus presaging a population decline of 2 million. The basic version of the Eurostat population forecast prepared in 2013 projects a higher population, namely 9.2 million inhabitants, primarily due to the different assumptions with regard to migration. In the following, we present the assumptions of the basic versions of the HCSO HDRI (2015) and the Eurostat (2013) forecasts.

The population forecasts assume an increase in the fertility rate (Table 2-2). Based on the assumption of HCSO HDRI (2015), the rate will reach the current EU average of around 1.6 and stabilise at this level until 2060. The projection of Eurostat (2013) projects

gradual convergence of the fertility rate, which may be 1.74 by 2060. In the coming period, the government measures carried out in recent years may increase the willingness to have children.<sup>37</sup> In addition to the willingness to have children, the future development of the fertility rate is significantly influenced by the number of women of child-bearing age. Since in the coming decades a significant decline can be expected in this group, the birth rate is expected to decrease despite the increasing fertility rate, which will result in a significant population decline by 2060. The birth number of roughly 90,000 children in 2013 may fall to 85,000 by 2060 based on the basic version of Eurostat (2013), and to 63,000 based on the basic path of HCSO HDRI (2015).

In addition, the projections assume a gradual increase in life expectancy, while there are significant differences in the assumptions related to migration. Looking ahead, the HCSO HDRI takes into account – based on certain estimation outcomes – that the balance of international migration has already turned negative in the recent years in Hungary: the actual number of the persons working abroad on average exceeded the number of the immigrants by 7,000 between 2010 and 2012 (Chart 2-9). The difference is attributable to the fact that the statistics related to migration, particularly those on emigration, involve significant uncertainties, which however can be adjusted by the statistics of the host countries of Hungarian emigrants. Based on this, the basic version

**Table 2-1**  
Expected size of the Hungarian population until 2060 according to different population projections

Source	Population forecast type	2020	2040	2060	2060–2010
KSH NKI (2015)	Low scenario	9,5	8,6	7,9	-2,1
	Baseline scenario	9,5	8,1	6,7	-3,3
	High scenario	9,6	8,9	8,7	-1,3
Eurostat (2013)	Low scenario	9,8	9,5	9,2	-0,8
	No migration scenario	9,7	8,8	7,9	-2,1
	Higher life expectancy scenario	9,8	9,6	9,4	-0,6
ENSZ (2015)	Low scenario	9,7	8,8	7,9	-2,1
	Baseline scenario	9,6	8,2	6,7	-3,3
	High scenario	9,8	9,4	9,2	-0,8
World Bank (2015)	Baseline scenario	9,7	9,1		

Note: In the case of KSH NKI (2015), the baseline scenario corresponds to the realistic future expected at the time of projection, while the low and high scenario appoint the lower and upper bound of the future population size. The projection of Eurostat (2013) and UN (2015) introduces further alternative paths besides the scenarios presented above. The projection horizon of World Bank (2015) goes on to 2050.

Sources: Eurostat (2013), HCSO HDRI (2015), UN (2015), World Bank (2015)

**Table 2-2**  
Hypotheses of Hungarian population projection

Source	Indicator	2013 data	2030	2060
KSH NKI (2015)	Fertility rate	1,34	1,60	1,60
	Life expectancy at birth (years), men	72,0	76,7	84,8
	Life expectancy at birth (years), women	78,7	82,4	88,7
	Net migration <sup>1</sup>	-7 340	-5 960	7 500
Eurostat (2013)	Fertility rate	1,38	1,61	1,74
	Life expectancy at birth (years), men	71,9	75,9	82,0
	Life expectancy at birth (years), women	78,8	85,4	87,0
	Net migration	8 100	20 900	14 000

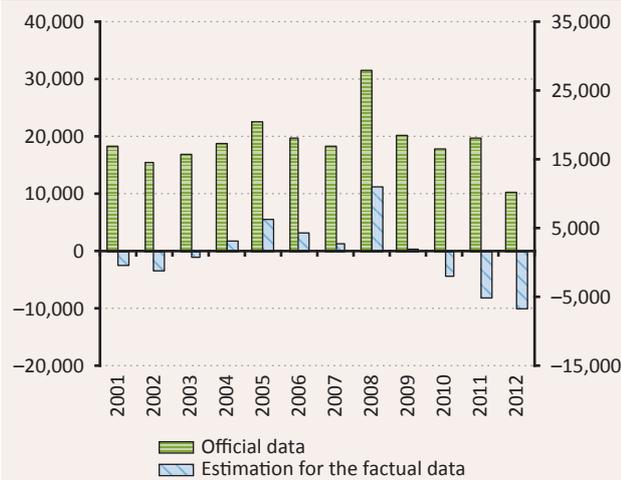
Note: 1. Estimation for 2012.

Sources: Eurostat (2013), HCSO HDRI (2015)

<sup>37</sup> For example, the introduction of the family tax allowance, child-care benefit extra, the Job Protection Action Plan.

of the HCSO HDRI (2015) assumes that the number of immigrants will slowly increase due to the increasing labour demand of the Hungarian economy, in parallel with this the emigration rate will decrease and it may stabilise at a low level from the 2030s. Thus, the balance of net migration may become positive from the 2030s and from the end of the 2040s it may stabilise at the level of 7,500 persons per year.<sup>38</sup>

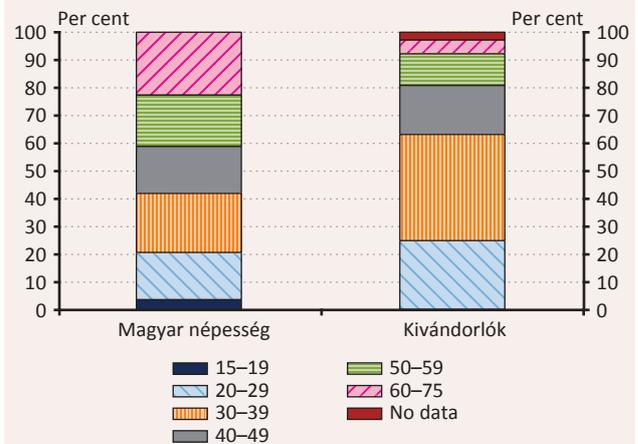
**Chart 2-9**  
Official data and estimated data for the net balance of migration in Hungary



Sources: Bleha et al. (2014); HCSO

In addition to the balance of net migration, the age composition and education level of the persons working abroad may also have an impact on labour market developments. Based on the data of SEEMIG<sup>39</sup> between 15 and 74 years the age composition of the persons working abroad is typically younger than that of the entire Hungarian population (Chart 2-10). The average age of persons working abroad between the age of 15 and 74 is 38 years, while in the same age group of the Hungarian population this is 45 years. One-quarter of persons working abroad are between the age of 20 and 29 years, and about two-thirds of them are younger than 40.<sup>40</sup> Regarding educational attainment, they are typically higher educated than the average of the Hungarian population as the ratio of those with secondary school education and tertiary education is higher than the average value for the total Hungarian population. However, Hungarian persons working abroad are still strongly related to the Hungarian economy, for instance the labour income

**Chart 2-10**  
The distribution of the Hungarian emigrants and the Hungarian population by age, emigrants between 1989 and 2013



Source: SEEMIG

**Chart 2-11**  
Labour income acquired abroad by Hungarian residents



Source: HCSO

acquired by Hungarian residents working abroad appearing in the balance of payments has stabilised on a permanently high level in past years amounting to 3 per cent of GDP (Chart 2-11). The labour market effect of persons who work abroad may be partially offset by immigrants as among immigrants the ratio of working-age persons (15-64 years old) is higher than in the Hungarian population based on the data of the 2011 census. In addition, as regards the education level, the ratio of those with higher education within the immigrants of 25-64 years of age is higher compared to that of Hungarian population, and their employment rate is also higher.<sup>41</sup>

<sup>38</sup> Földházi (2015)

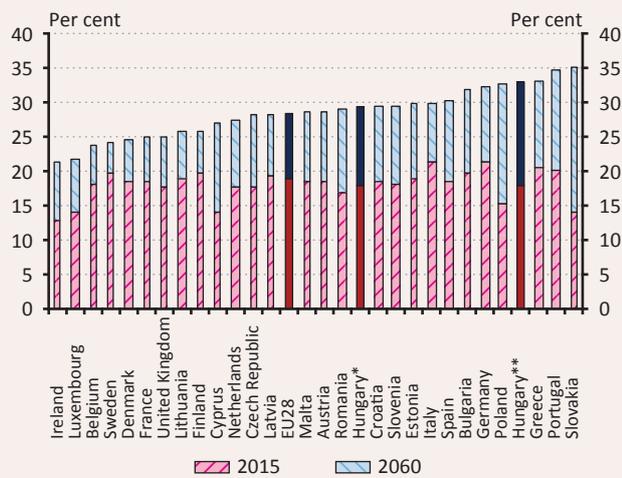
<sup>39</sup> SEEMIG – A strategic project founded by the European Union’s South-East Europe Programme, the purpose of which is to assess the migration, human capital and demographic processes of South-East Europe.

<sup>40</sup> SEEMIG (2014)

<sup>41</sup> Kincses (2015)

Based on the population forecasts, ageing may accelerate in Hungary in the coming decades and its extent may exceed the EU average. The degree of ageing can be captured by a number of indices. These include, for example, the ratio of those 60 or 65 and older within the population<sup>42</sup> and the development of the various dependency ratios (e.g. the old-age dependency ratio). The ratio of those 65 and older within the population may increase in Hungary from 18 per cent in 2015 to close to 30 per cent by 2060 based on the Eurostat (2014) population projection. The projection of HCSO HDRI (2015), prepared on the basis of different assumptions, shows an even more unfavourable value, namely 33 per cent, for 2060. In the EU countries, the ratio of those 65 and older may increase from about 19 per cent in 2015 to 28.4 per cent until 2060, and thus the increase of the ratio of the older generation may be lower in the EU than in Hungary (Chart 2-12).

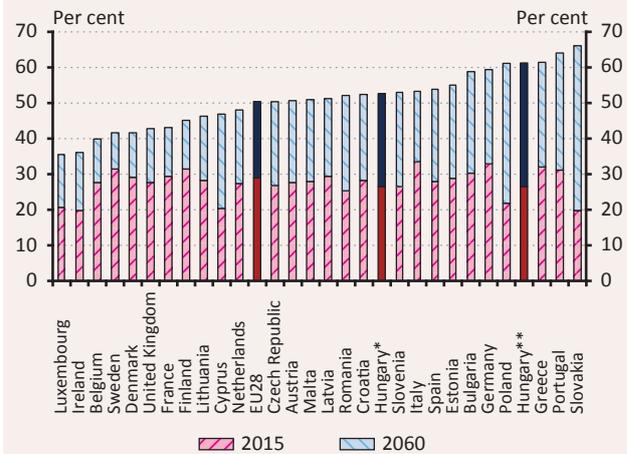
**Chart 2-12**  
Ratio of persons over 65 in EU countries in 2015 and in 2060



Note: \*Eurostat, \*\*HCSO HDRI (2015).  
Source: Eurostat (2013), HCSO HDRI (2015)

By 2060, the old-age dependency ratio may double in Hungary compared to the present level, and thus the support burdens on economically active age groups may significantly increase in the coming decades as a result of population ageing. The old-age dependency ratio is the ratio of the elderly (65 and older) to the working-age population (15–64 years). Based on Eurostat (2013), the ratio may increase from 26 per cent in 2015 to 52 per cent, while according to the projection of HCSO HDRI (2015) it may rise as high as 61 per cent by 2060 in Hungary; thus, the ratio may

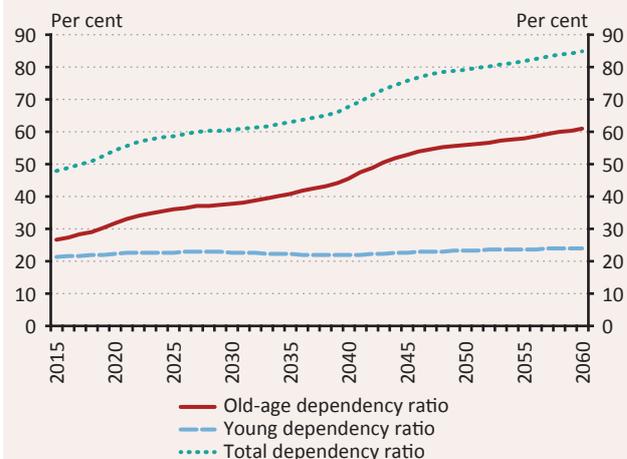
**Chart 2-13**  
Projected development of the old-age dependency ratio in EU countries in 2015 and in 2060



Note: \*Eurostat, \*\*KSH NKI (2015). Other data come from the population projection of Eurostat (2013).  
Sources: Eurostat, HCSO HDRI (2015), Eurostat (2013)

exceed the European average (50.2 per cent) (Chart 2-13). While there were 26 elderly people per 100 persons of working age in 2015, in 2060 100 working-age people will have to support twice as many, i.e. 52–61, elderly people. The total dependency ratio may increase to a lesser extent, as the fall in the number of children may partially offset the increase in the number of the elderly. By 2060 the total dependency ratio may equal to 85 per cent, which means that the generations that are younger and older than the working age population will come close to the number of the working-age persons, at 85 per cent thereof.

**Chart 2-14**  
Dependency ratios in Hungary, 2015-2060



Source: HCSO HDRI (2015)

<sup>42</sup> In view of the fact that in most European countries the pensionable age is approaching 65 years, in our analysis we examine the group of those 65 and older.

The youth dependency ratio may increase only slightly, from 21 per cent to 24 per cent between 2015 and 2060 (Chart 2-14). The youth dependency ratio may increase, despite the decreasing share of children, because according to the population projection the working-age population may decrease to a larger extent than the number of children.

### 2.1.3 LABOUR MARKET AND MACROECONOMIC IMPACTS OF DEMOGRAPHIC CHANGES

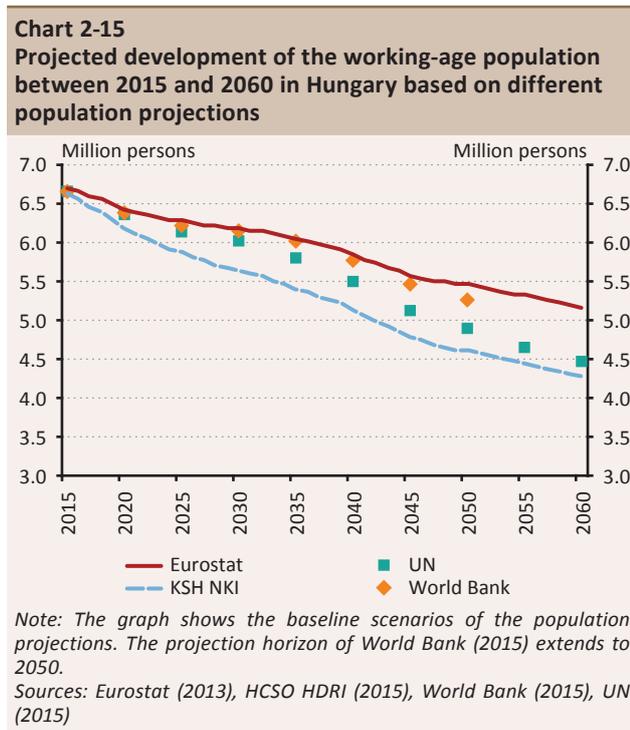
As regards the labour market, the most important demographic change is the probably significant fall in the working-age population. All of this is important, because the labour force available for production may substantially decrease in Hungary. In Hungary, the working-age population, i.e. the number of those aged 15-64 years, may fall from 6.6 million measured in 2015 to 4.3 million by 2060.<sup>43</sup> (Chart 2-15). In 2060, the potentially available labour supply will be less by one-third of the current stock of working age population. The ratio of the working-age people within the population may also significantly decrease, from 68 per cent in 2015 to 54 per cent by 2060. In the European Union, this impact may be lesser, where the working-age population may decrease by 11 percent

by 2060 compared to 2015, as opposed to the 35 per cent decrease expected in Hungary. In the EU member states, the ratio of the working-age people within the population may also fall to a lesser extent: it may decrease from 66 per cent in 2015 to 57 per cent by 2060. In addition, in the working-age population of Hungary a gradual ageing can also be expected. Looking at the various projections, it can be concluded that in 2060 the working-age population will be in the range of 4.2 to 5.1 million persons.

Looking ahead, demographic processes may become an increasingly relevant labour supply challenge. In the 1970s, the working-age population increased by 5 per cent compared to the average headcount in the 1960s, and in the decades thereafter it practically stagnated up to the early 2010s (Table 2-3). Based on the basic version of the HCSO HDRI (2015) population projection, in the 2010s the size of the working-age population may decrease by 4.5 per cent compared to the average of the previous decade.

The demographic changes may have the most significant labour market impact in the 2020s and in the 2040s, as the size of the working-age population may decline by 11 per cent in both of these decades (Table 2-4). This may also be attributable to the “Ratkó generations” (named after the one time health care minister Anna Ratkó), which are much higher in number than the new generations entering the working age, which will turn 65 in these decades. Similar trends will also take shape on the basis of the Eurostat (2013) forecast, which projects a somewhat lesser, altogether 25 per cent decrease in the working-age population between 2010 and 2060, as opposed to the 38 per cent decrease projected by the basic version of the HCSO HDRI (2015) forecast.

The ratio of working-age persons within the population may decrease to a lesser degree than the number of working-age persons, which also contributes to the increase in dependency ratios. Looking ahead, the size of the population will also decrease, but to a lesser degree than the labour force, primarily due to the increasing number of those older than 65. The ratio of working-age people within the population was practically stable between 1960 and 2010, at between 66 and 69 per cent. This ratio may fall to 61 and 55 per cent by the 2030s and 2050s, respectively, that is by the end of the 2050s the number of the working-age people may decrease to half of the population (Table 2-5).



<sup>43</sup> HCSO HDRI (2015), basic version.

**Table 2-3****Headcount of the working-age population, 1960–2009 (million persons)**

	1960–1969	1970–1979	1980–1989	1990–1999	2000–2009
Average headcount of working age population (million persons)	6,7	7,0	7,0	7,0	6,9
Change in the headcount		5,0%	–0,6%	–0,6%	–0,3%

Note: The group of working age population contains ages 15–64.  
Source: HCSO HDRI (2015)

**Table 2-4****Expected development of the working-age population, 2010–2059**

		2010–2019	2020–2029	2030–2039	2040–2049	2050–2059	2010–2060
KSH NKI (2015)	Average headcount of working age population (million persons)	6,6	5,9	5,4	4,8	4,4	–2,6
	Change in the headcount	–4,5%	–11,1%	–8,0%	–10,8%	–8,0%	–37,8%
Eurostat (2013)	Average headcount of working age population (million persons)	6,7	6,3	6,0	5,6	5,3	–1,7
	Change in the headcount	–3,5%	–6,2%	–3,7%	–7,1%	–5,4%	–25,1%

Note: The group of working-age population includes the age group of 15–64 years.  
Sources: Eurostat (2013), HCSO HDRI (2015)

**Table 2-5****Expected development of the share of working-age population, 2010–2059**

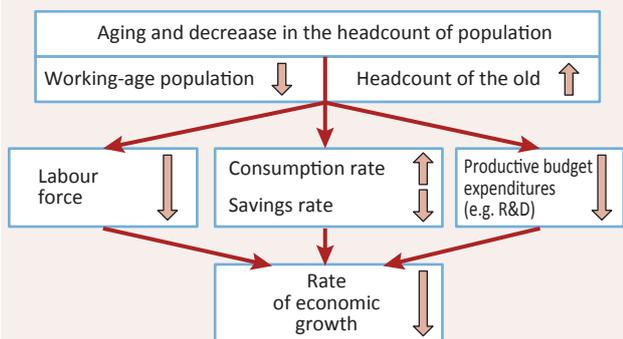
		2010–2019	2020–2029	2030–2039	2040–2049	2050–2059	2010–2060
KSH NKI (2015)	Share of working age population (%)	68%	63%	61%	57%	55%	–15%
	Change	–1,6%	–6,4%	–3,0%	–6,5%	–4,1%	–21,2%
Eurostat (2013)	Share of working age population (%)	68%	64%	63%	59%	57%	–12%
	Change	–1,3%	–4,9%	–2,3%	–5,5%	–3,6%	–18,2%

Note: The group of working-age population includes the age group of 15–64 years.  
Source: Eurostat (2013), HCSO HDRI (2015)

**The change in the size and age composition of the population may affect the development of key macroeconomic variables, and thus economic performance, via several channels.** The demographic changes may exert an impact both on the supply and the demand sides: on the **supply side** they affect economic performance via the labour market, the capital accumulation and the productivity channels, while on the **demand side** their impact appears via the consumption, savings and budget channels.

**In the long run, the accelerating rate of decline in the working-age population may represent a challenge of increasing importance for economic growth.** In examining the impact of labour market processes on growth based on the production function, assuming a Cobb-Douglas production function and the usual two-thirds labour ratio, it is clear that between 1980 and 1999 demographic processes made a positive contribution to growth, but after a sharp turn growth decelerated by 0.5 percentage points after 2000,

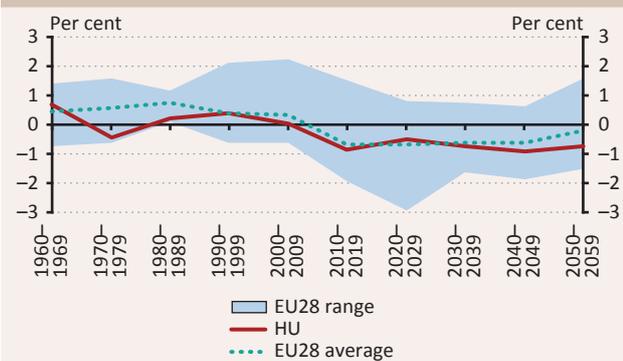
**Chart 2-16**  
Impacts of ageing on economic growth



Source: MNB

**Chart 2-17**  
Growth impact of the change in the working-age population compared to 2000-2009

(based on production function)



Source: Kreisz-Hudák – Varga – Várpalotai, 2015

due to the decrease in the number of the active population. The deceleration of per capita growth may be even higher than that (0.6 – 0.7 percentage point), as the inactivity rate is gradually increasing. When the grandchildren of the Ratkó generation reach

the inactive age, in the 2040s the deceleration of the growth rate may be even higher than the average in the countries of the European Union. In addition, the impact of ageing on economic growth can be determined by several methods. Based on estimation results, in the 2050s per capita growth may decrease even by 2 percentage points compared to the average of the 2000s as a result of demographic processes.<sup>44</sup>

**Ageing may impact aggregate consumption and saving rates due to the longer life expectancy and change in the ratios of age groups.** Based on the life-cycle hypothesis, individuals’ propensity to consume and save depends on age. In young and old age, the consumption rate is higher and the saving rate is lower than that of middle-age population, because in the young age people do not have sufficient income to save from, while in old age people typically deplete the savings of the previous periods. With the shift in the age structure, the aggregate consumption rate may increase, while the aggregate savings rate may decrease, in view of the fact that the ratio of the active population characterised by higher saving rate will be lower, and the ratio of the older age groups of typically higher consumption rate will be higher. Based on empirical results, the increase in the old-age dependency ratio reduces the saving rate (Meredith, 1995) and the number of those 65 and older has a significantly negative impact on the saving rate (Lindh, 1999). **Population ageing may have a negative impact on the fiscal balance over the long run**, primarily through higher pension and health expenditures. Since as a result budget expenditures increase, and these expenditures are realised as the payment of social transfers rather than in the form of productive investments, ageing in the long run may also have a negative impact on economic growth.

**Box 2-1**

**Regional characteristics of certain demographic indicators and processes**

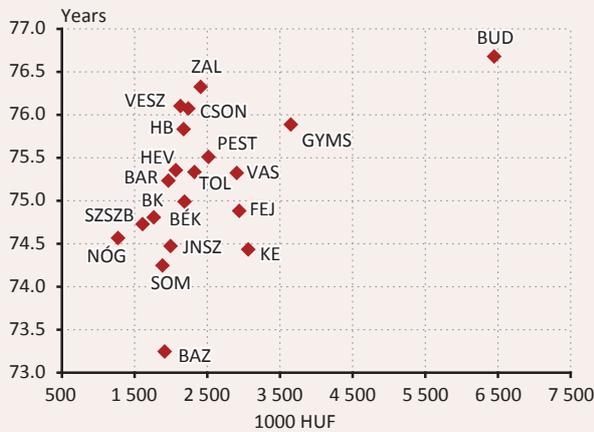
**Life expectancy at birth**

In the regional pattern of life expectancy at birth, the division of the west and east may be deemed traditional. The national mean value was exceeded only – with the exception of two counties (Csongrád, Hajdú-Bihar) – by the capital and the western counties, with Budapest being well ahead of all other regions. The indicator shows a strong correlation with the value of per capita GDP. The counties with the lowest per capita GDP also lag behind in terms of the life expectancy at birth (Chart 2-18). In this respect Komárom-Esztergom represents a negative anomaly, which is amongst the worst-performing

<sup>44</sup> The detailed calculation results are available in the study of Kreisz-Hudák – Varga – Várpalotai (2015).

**Chart 2-18**

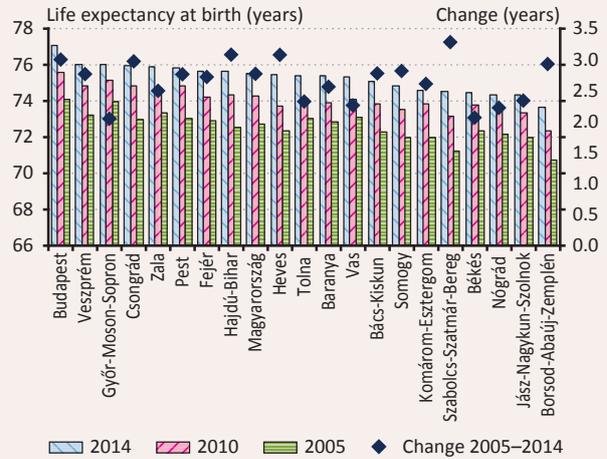
**Average life expectancy at birth and per capita GDP in the counties of Hungary, 2013**



Source: HCSO STADAT 6.1.7, 6.3.1.2.

**Chart 2-19**

**Average life expectancy at birth in the Hungarian counties (2005, 2010, 2014)**



Sources: HCSO STADAT 6.1.7; HCSO Regional Statistical Yearbook 2005 1.6

counties in terms of life expectancy at birth despite the third highest per capita GDP. The position of Vas county is similarly unfavourable. The positive and negative anomalies in part may also be attributable to the special features of the settlement structure. According to conventional wisdom, the lower the number of inhabitants in a settlement, the more unfavourable the mortality rate and the lower the life expectancy are, while the most favourable living conditions are offered by towns with a population of 50,000 to 100,000.<sup>45</sup> In view of, for example, the settlement structure of Vas county characterised by small villages, and the relatively high urbanisation of Csongrád and Hajdú-Bihar counties, the settlement structure properties may partially explain the anomalies.

As regards life expectancy at birth, in the last ten years an almost unbroken increase could be seen at the national level. Life expectancy at birth increased by more than 4 years at the national level since 2005. However, there are significant differences at the county level in this respect as well. Life expectancy increased in Szabolcs-Szatmár-Bereg county, which is at the very end of the ranking, and it also increased in Borsod-Abaúj-Zemplén county by almost 3 years, albeit it is still the lowest (Chart 2-19). Among the top-ranking counties there was a significant increase in Budapest, as well as in Csongrád and Hajdú-Bihar counties. This value improved the least in Győr-Moson-Sopron county, and the increases in life expectancy in Békés, Nógrád and Jász-Nagykun-Szolnok counties – all of which are at the end of the ranking – also fell short of the national average.

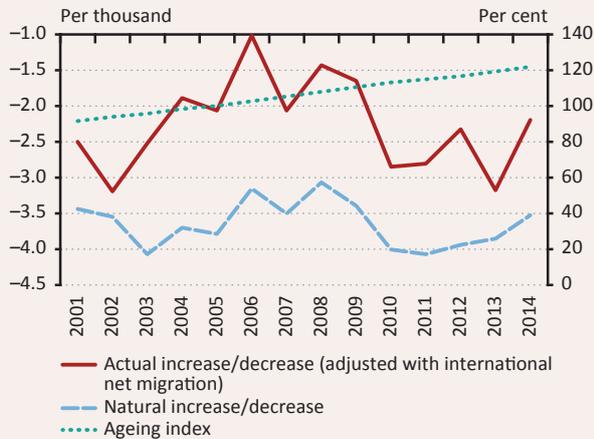
**Regional features of the population decline**

The population decline is a process that started in 1981; since then Hungary’s population has declined by more than 1 million. In 2014, it was 9,877 thousand.

The natural increase is negative in all counties, but the degree of this is different (Chart 2-21). Szabolcs-Szatmár-Bereg, Pest and Hajdú-Bihar counties have the best relative values. The population decline is slower than the national rate in Győr-Moson-Sopron and Fejér counties, and also in Budapest (–3.5 per thousand) , while it is somewhat faster in Borsod-Abaúj-Zemplén, Komárom Esztergom and Veszprém

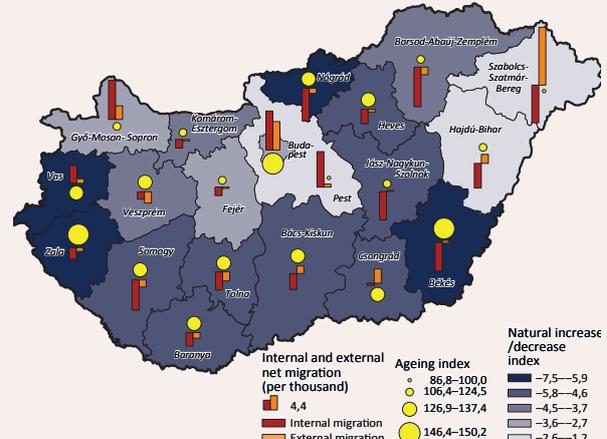
<sup>45</sup> HCSO Statistical Review (2010), Vol. IV Issue 115.

**Chart 2-20**  
Natural increase/decrease, ageing index, internal and international net migration in Hungary, 2001-2014



Note: Country level  
Source: HCSO STADAT 6.1.5, 6.1.6.

**Chart 2-21**  
Natural increase/decrease, ageing index, internal and international net migration in Hungary, 2014



Note: County level  
Source: HCSO STADAT 6.1.5, 6.1.6

3 counties. In most parts of the country the population decline rate is between -4.2 and -5.2 per thousand. The most dynamic population decline was observed in Békés, Nógrád, Vas and Zala counties.

The ageing of the Hungarian population is a decade-long process; at present the ageing index – which expresses the percentage ratio of the elderly population (65 years and over) to the child population (0–14 years) – is 121.5 per cent. The ageing index is one measure of the population’s age structure, and as such it is essentially determined by the demographic trends, therefore its value shows a similar pattern as that of the natural increase. Compared to the national level Szabolcs-Szatmár-Bereg and Pest counties have a youthful age structure, where the ratio of the elderly population have not yet exceeded the youth. Borsod-Abaúj-Zemplén, Győr-Moson-Sopron, Fejér and Komárom-Esztergom counties have better indicators than the national level, but in these countries the number of elderly people already exceeds that of young people. In the rest of the counties the ageing of the population is higher than the national mean, with the most unfavourable values observed in Békés and Zala counties, and also in Budapest.

In the last 24 years, the negative and – apart from minor interruptions – continuously worsening trend of the natural increase was always compensated by cross-border migration, albeit to a varying degree (Chart 2-20). The primary recipients of these were the counties on the eastern and south-eastern border (except Békés), first of all Szabolcs-Szatmár-Bereg county and Budapest, but Győr-Moson-Sopron county also exhibits a substantial foreign migration surplus. There is minor plus in Pest and Békés counties, while the emigration reduces the population of all other counties, albeit to a different degree. The highest emigration rate was experienced in Veszprém and Tolna counties.

The primary targets of the internal migration were the regions regarded as the key beneficiaries of the processes that accompanied the political transition. Central-Hungary, Győr-Moson-Sopron and Vas counties are still the primary target regions of those changing their place of abode, while Fejér and Komárom-Esztergom counties have had negative internal migration balance already since 2008, just like all other counties. As regards the internal migration, Budapest is in a special situation. In the 1990s up to 2006 its population was declining due to the suburbanisation processes; this trend turned around in 2007 and by now the capital has once again become one of the key targets of the internal migration.

## 2.2 Qualification level of the labour force

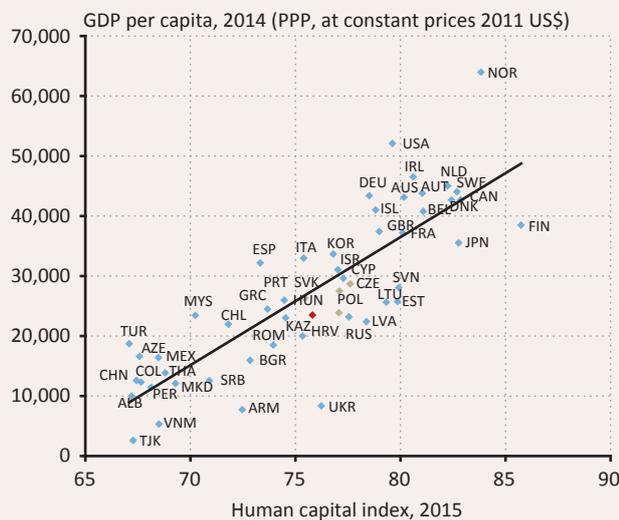
**Human capital stock is one of the determining factors of long-term growth potential.** There is a positive relation between human capital<sup>46</sup> and per capita GDP: on the one hand, countries with higher human capital stock achieve higher economic growth, and on the other hand, more developed countries can use more resources for the expansion of human capital (Chart 2-22). Increase in the human capital stock is substantially supported – in addition to the knowledge and experience obtained during work – by education.

**Education contributes to economic growth through three channels:** it increases the productivity of the labour force, increases the innovation performance of the economy, and also facilitates the acquisition of the knowledge required for understanding and applying new technologies (Hanushek and Wössmann, 2007).

**The qualitative features of the labour supply can be best captured by the education level of employees.** In the past period, in those countries where the ratio of highly qualified employees increased to a larger extent, per capita GDP growth was also higher (Chart 2-23.) A highly qualified labour force is more productive and contributes to technological innovation, as it develops and masters new technologies more easily. Highly educated employees usually have more favourable labour market opportunities, their participation and employment rate is higher; this group is also characterised by higher average wages and better health status compared to the group of less skilled employees.

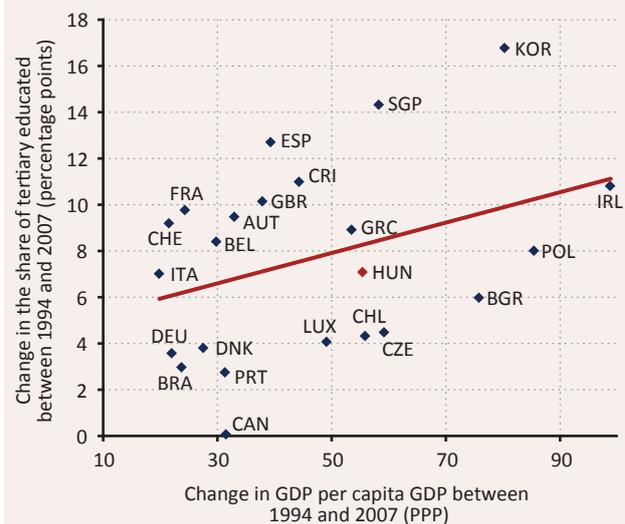
**In terms of economic growth, the quality of the education system is even more important than**

**Chart 2-22**  
Per capita GDP in 2014 and the human capital index in 2015



Note: The human capital index is a composite index of schooling and employment. The index contains the enrolment rates in education, educational attainment and indicators referring to the quality of education, and the labour force participation of certain groups. The index is standardized to a scale between 0 and 100.  
Source: World Bank, WEF (2015)

**Chart 2-23**  
Change in the share of tertiary educated persons within the working-age population and GDP growth between 1994 and 2007



Source: World Bank

<sup>46</sup> The literature contains several definitions for the human capital stock, thus for example, according to OECD (1998) the “human capital is the knowledge, skills, competences and other attributes embodied in individuals that are relevant to economic activity” (OECD, 1998), p. 24. Other definitions relate to the entire population rather than to the working-age population; for example based on WEF (2015) the human capital includes the skills and capacities that reside in people and that are put to productive use.

**the qualification level.** The quality of the education system is most often measured by students’ cognitive capabilities, which are then quantified on the basis of the results achieved in the international tests. The capabilities of the students have a significantly positive impact on per capita real GDP growth and based on the data of developing and developed countries between 1960 and 1990 the impact of the years of schooling on growth becomes insignificant when considering the quality of the education (Hanushek and Wössmann, 2010). Accordingly, in addition to increasing the rate of participation in education the further improvement of the quality of education system is a key challenge, which strengthens the capabilities of students entering the labour market.

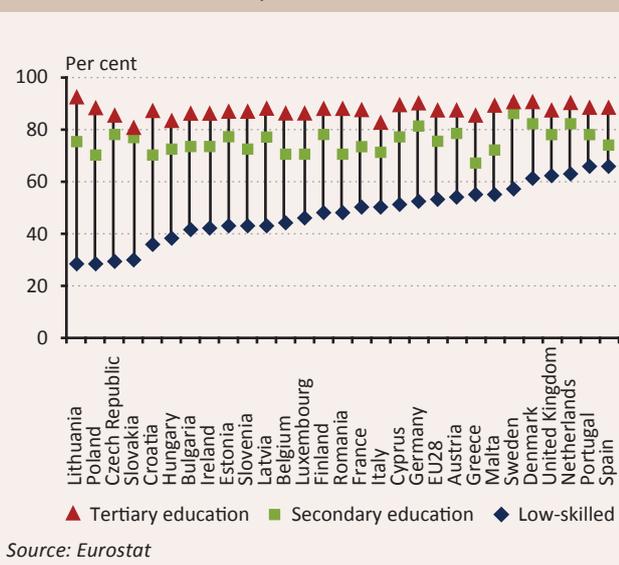
### 2.2.1 SIGNIFICANCE OF THE EDUCATION LEVEL OF THE LABOUR FORCE

**Education level strongly influences labour market activity.** When examining the education level, three groups are differentiated: the low-skilled, who have no secondary school education, those with secondary school education and those with a higher education degree. Of the three groups, the labour force participation rate of higher education degree holders is the highest both in the EU countries and in Hungary. The activity rate of those with a higher education degree in Hungary was 83 per cent in

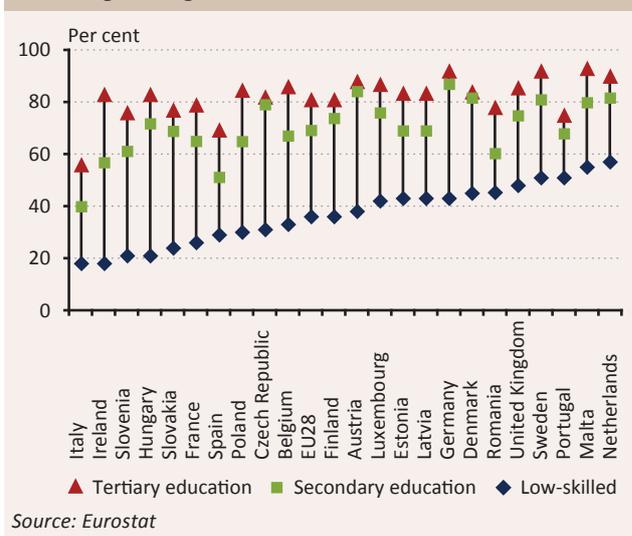
2014, which, however, is one of the lowest values in the European Union compared to those with similar qualifications. The highest difference can be seen in the activity rate of the low-skilled and those with secondary school qualification: while the activity rate of those with higher education degree is on average by 12 percentage points higher than the rate of those with secondary school qualification, the activity rate of those with secondary school qualification exceeds the activity rate of the low-skilled by 22 percentage points in the EU countries (Chart 2-24). That is, the difference observed in Hungary is even higher than the average EU values: the labour force participation rate of those with secondary school qualification is almost twice as high than the rate of the low-skilled. Therefore, **in Hungary a vast part of the labour market reserve consists of the low-skilled.**

**Labour market opportunities are much better for those with a higher education degree compared to the groups of the low-skilled.** In Hungary, in the 15-34 age group the employment rate – within 5 years after obtaining the highest school degree – of those with higher education degree is four times as high as that of the low-skilled (Chart 2-25). Similarly, within the working-age population the employment rate of the highly educated group is the highest. In the EU countries more than 80 per cent of those holding a higher education degree are employed, as opposed to the average employment rates of 68 per cent and 43 per cent of those with secondary school education and the low-skilled, respectively (Chart 2-26). In addition,

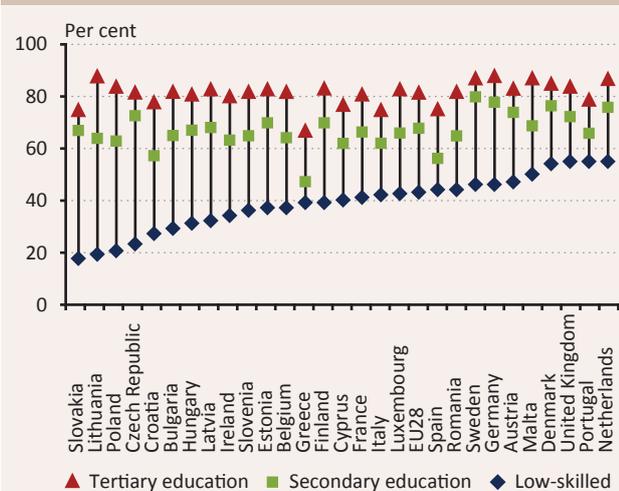
**Chart 2-24**  
Activity rate of the population aged 15-64 by educational attainment, 2014



**Chart 2-25**  
Employment rate of the population aged 15-34 by educational attainment within 5 years after the obtaining the highest educational attainment, 2014

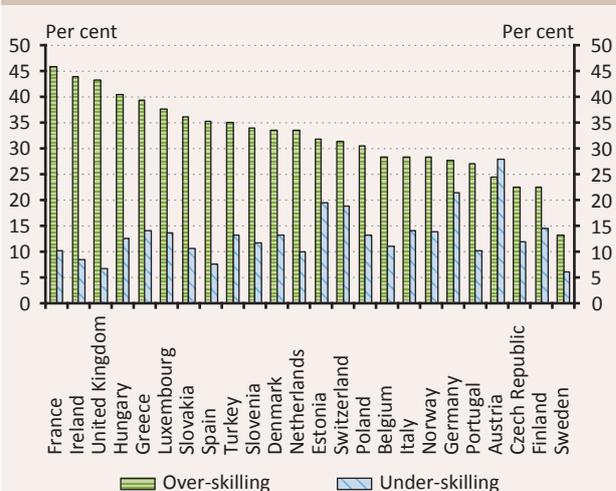


**Chart 2-26**  
Employment rate of the population aged 15-64 by educational attainment, 2014



Source: Eurostat

**Chart 2-27**  
Self-reported skills mismatch among employees and self-employed, 2010



Source: OECD

school qualification may also be regarded as some sort of insurance against unemployment: during the economic crisis, the unemployment rate of the highly educated groups both in Hungary and in the OECD countries was significantly lower and increased at a substantially lower rate than that of the low-skilled.

**The more favourable labour market opportunities of those with a higher education degree in part may be attributable to the fact that they can also take on jobs that require lower skills than they obtained. However, this is inefficient for the economy as over-qualified employees cannot utilise their capabilities in full, while those with lower qualification are crowded out from the labour market.** In the OECD countries, on average every third employee was over-qualified in 2010, that is their school education level was higher than the qualification required for the job they held. The ratio for low-skilled workers was substantially less frequent, i.e. it appeared at every sixth employee. In Hungary, 40 per cent of the respondent employees regarded themselves as over-qualified for the job they performed, while the ratio of the low-skilled was merely 12.5 per cent in 2010 (Chart 2-27).

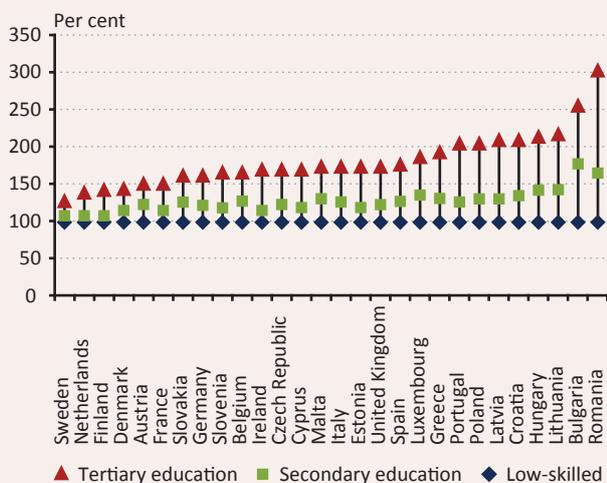
**Employment not corresponding to the education level may be attributable to several factors.** On the one hand, the school qualification does not reflect the capabilities of the individuals properly: the capabilities of the employee with same education

level are different and the school qualification does not reflect the knowledge obtained at work either. On the other hand, in parallel with the time spent outside the labour market the obtained knowledge may also become obsolete. Thirdly, specialisation may significantly influence the employment opportunities irrespectively of the level of education. However, this phenomenon does not necessarily mean that there is an oversupply of highly educated in the labour market, as the wage advantage of the higher education graduates has not decreased in the past years either, and has even increased in certain countries.<sup>47</sup>

**The wage of employees with higher qualification typically exceeds the average wage of lower skilled employees, which may be also attributable to the higher productivity and the scarcity of the higher education graduate labour force.** The relative wage advantage of higher education degree-holders in the Central and Eastern European countries is usually higher than in the other EU countries (Chart 2-28). In Hungary, the net earned income of the highly educated groups is on average twice as high, while the wage of those secondary school education is one and a half times higher than the average income of the low-skilled. The net return on the higher education degree compared to the secondary school qualification is high in Hungary even by international standards (Chart 2-29). There is a negative relation between the wage advantage of the higher education graduates

<sup>47</sup> Quintini (2011)

**Chart 2-28**  
Net relative earnings of the population aged 18-64 by educational attainment, 2013



Note: The graph depicts the yearly average net earning of certain groups expressed as a per cent of earnings of low-skilled workers, based on data in national currency. Source: Eurostat

compared to those with secondary school education and the ratio of the higher education graduates with the population: in those countries where the number of the degree-holders is lower, the higher education graduates have a higher wage advantage. In addition, the wage advantage of higher education degree may be further increased if the wage level that can be achieved with secondary school qualification is relatively low, and it may be also impacted by the employment opportunities observable by education level.

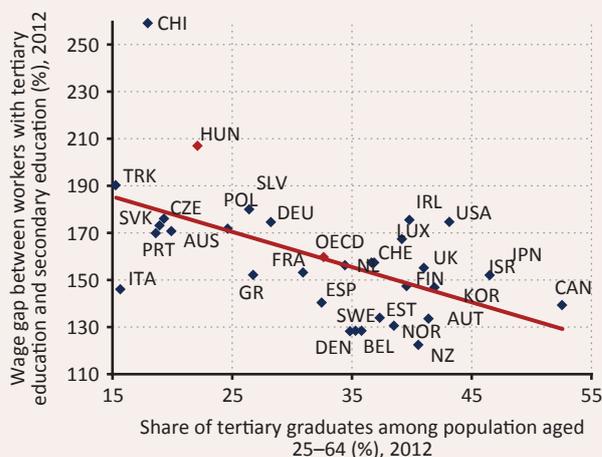
**The increase in ratio of those holding a college or university degree can result in higher economic growth both on the supply and on the demand side.** On the one hand, the highly qualified labour force is characterised by a higher activity rate, and moreover this labour force can enhance R&D to a larger extent compared to the groups with lower qualification. Tertiary educated workers usually earn higher wages and consume more, and this impact appears on the demand side of the economy. Highly qualified employees pay higher social security contributions, labour taxes and consumption taxes to the budget, and utilise social transfers to a lesser degree. The relative benefits arising from the higher education degree may decrease in the long run with the increase in the labour supply of the highly qualified individuals. However, based on the international experiences, with the increase of the rate of higher education graduates

within the younger generations the employment rate of the higher education graduates has not decreased.<sup>48</sup>

## 2.2.2 EDUCATION LEVEL IN HUNGARY

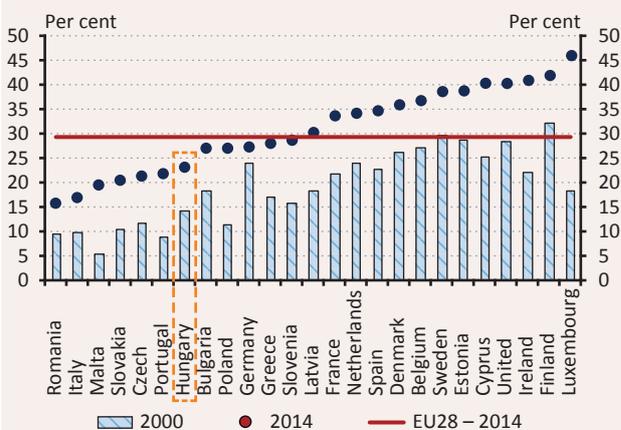
The ratio of the higher education graduates in Hungary increased from 14 per cent to 23 per cent since the millennium in the age group of 25-64 years (Chart 2-29). In the EU countries, the ratio of the higher education graduates increased from a higher initial level, i.e. from 20 per cent to almost 30 per cent.

**Chart 2-29**  
Share of tertiary graduates in the population and the relative wage gap, 2012



Source: OECD

**Chart 2-30**  
Share of tertiary graduates among the population aged 25-64, 2014



Source: Eurostat

<sup>48</sup> OECD (2013)

In Hungary, the ratio of college and university degree holders practically equals the average of the Visegrád countries, but it lags behind the EU average and the ratio observed in the more developed countries. Based on this, the qualification level of the labour force may be further improved in Hungary, which may also support the increase of competitiveness.

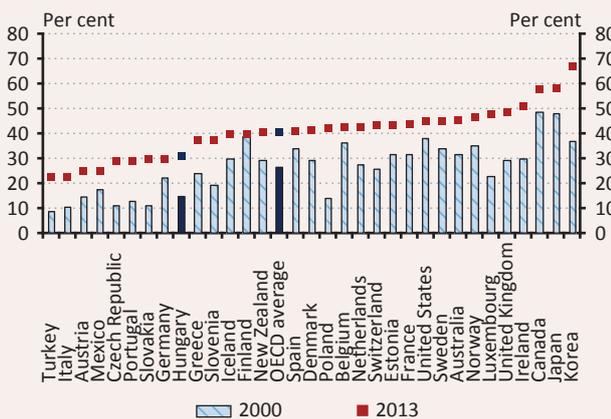
**The increase in the ratio of the higher education graduates within the population is attributable to the higher average education level of new employees entering the labour market.** Within the age group of 25-34 years, the ratio of higher education graduates has doubled since the millennium, and in 2013 it amounted to 32 per cent, which is still low in an international comparison (Chart 2-31). In the OECD countries, over 40 per cent of the age group of 24-34 years hold a higher

education degree, but in certain countries – e.g. in Japan and Korea – this ratio is 60-70 per cent. In Hungary, the ratio of higher education graduates within the age group of 24-34 years exceeds the average value typical for the working-age population, and it is almost twice as high as the ratio observed in the age group of 55-64 years (Chart 2-32). In an international comparison, the largest difference can be seen in the age group 35-44 years. This may be partially attributable to the fact that the grandchildren of the Ratkó generation, born in the 1970s, represent high-number generations and on the other hand, the lag may also be partly explained by the migration processes.

**There are also significant differences between the regions of Hungary in terms of the education level.** In the Central Hungary region, the ratio of higher education graduates within the population aged 25-64 is 35 per cent, which is twice as high as in the economically underdeveloped regions (Chart 2-33). In order to decrease the significant regional differences, increase in the access to higher education in the less developed regions may contribute to a higher education level.

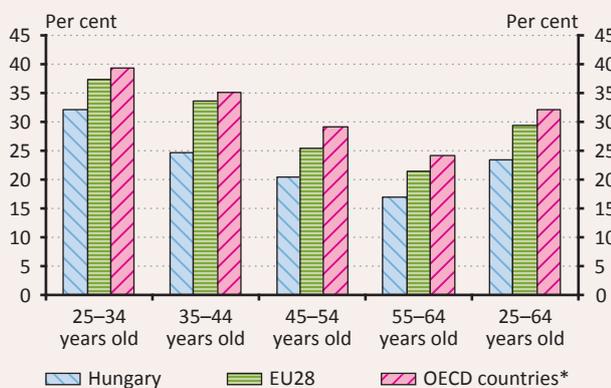
**In Hungary, within the population aged 20-29 years, there are less than 10 new graduates per 1,000 persons in the technical and natural science domains.** The ratio is gradually increasing, having risen from 4 per cent in 2001 to 9 per cent by 2011. In parallel with this, among college and university students, the ratio of students studying at technical and natural science faculties increased from 20 to 25 per cent (HCSO, 2012). However, the ratio of new graduates entering the labour market is still low, compared to both the

**Chart 2-31**  
Share of tertiary graduates among the population aged 25-34 in 2000 and in 2013



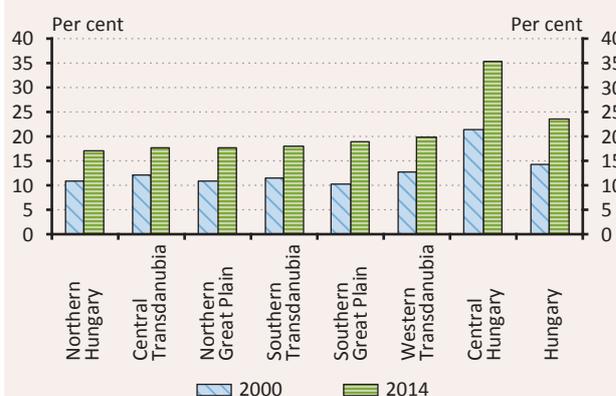
Source: OECD

**Chart 2-32**  
Share of tertiary graduates in certain age groups, 2014



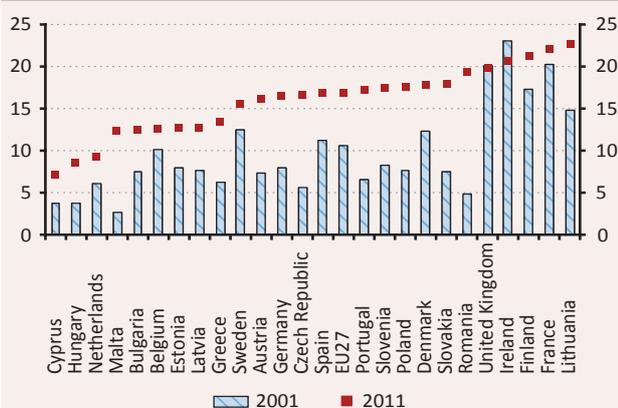
Note: \* Data for year 2012.  
Source: Eurostat, OECD

**Chart 2-33**  
Share of tertiary graduates among the population aged 25-64 in the regions of Hungary, 2014



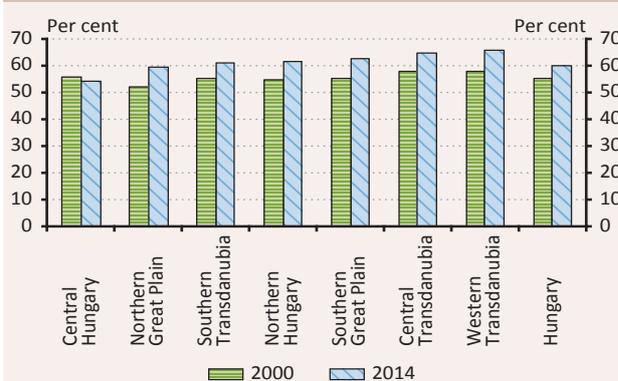
Source: Eurostat

**Chart 2-34**  
Tertiary graduates in science and technology per 1,000 inhabitants aged 20-29 years



Source: Eurostat

**Chart 2-36**  
Share of population with upper secondary educational attainment level in the population aged 25–64 in the regions of Hungary, 2014



Source: Eurostat

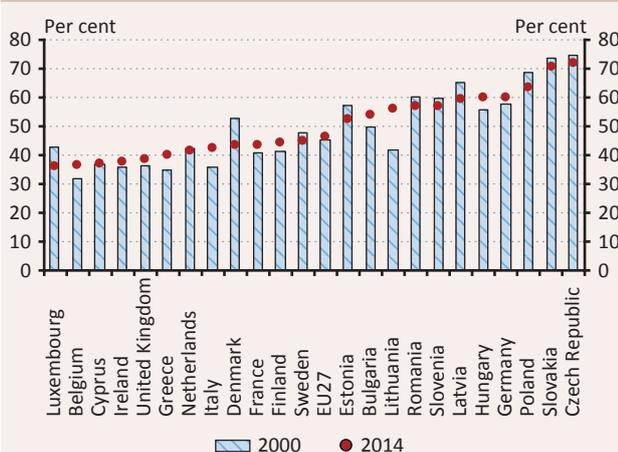
EU and the region (Chart 2-34). In some countries, e.g. the Czech Republic and Romania, the ratio of those obtaining a technical degree has risen considerably in the last decade. As a result of the technological progress, the labour demand for graduates, and particularly for those with technical and natural science degrees, may continue to increase in the coming period, which may necessitate an additional increase in this ratio.

**On the supply side of the labour market, the number of employees with secondary school education is the highest.** In Hungary, within the group of 25-64 years, the ratio of those whose highest educational level is secondary school is 60 per cent. Similarly to this, the ratio of those with secondary school qualification is

also high in the Czech Republic, Slovakia, Poland and Germany (Chart 2-35). The increase in the number of those with secondary school qualification since the millennium is attributable to the decrease in the ratio of early school leavers: in Hungary within the population aged 18-24 years the ratio of those not finishing secondary school education dropped from 14 per cent in 2000 to 11.4 per cent. As regards the regional inequalities, the ratio of those with secondary school qualification is higher than the national average in the Transdanubian region, but lower in the capital and in its agglomeration (Chart 2-36).

**The quality of the labour supply is also influenced by the language skills of the employees, in addition to their qualification level.** The Hungarian statistics

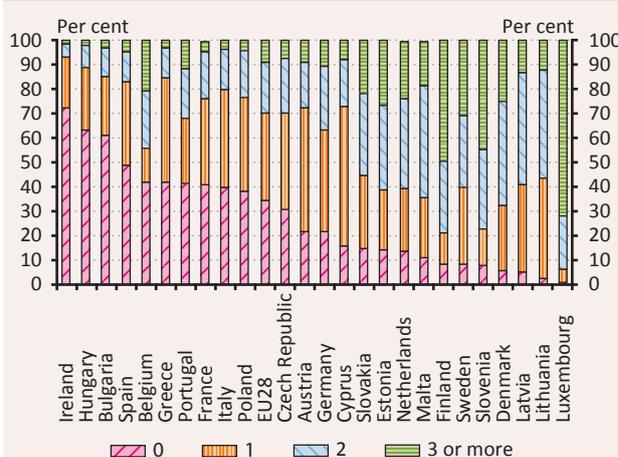
**Chart 2-35**  
Ratio of those the highest education level of whom is secondary school qualification within the population aged 25-64 years, 2014



Source: Eurostat

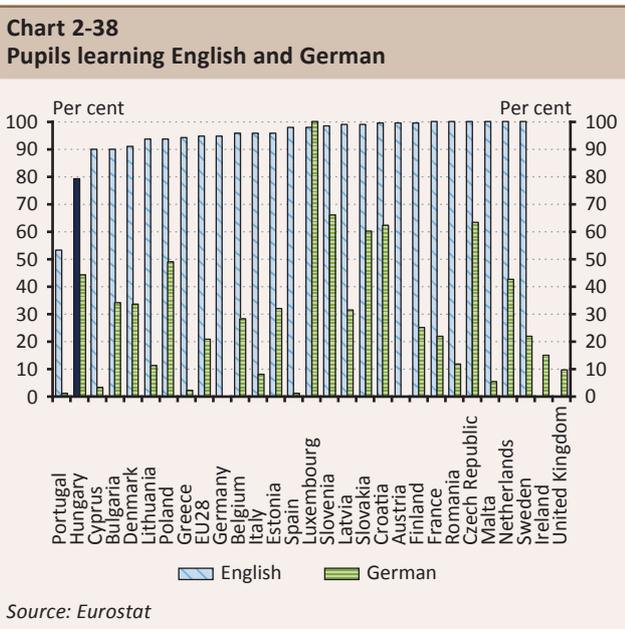
**Chart 2-37**  
Number of languages spoken, 2011

(self-reported data)



Source: Eurostat

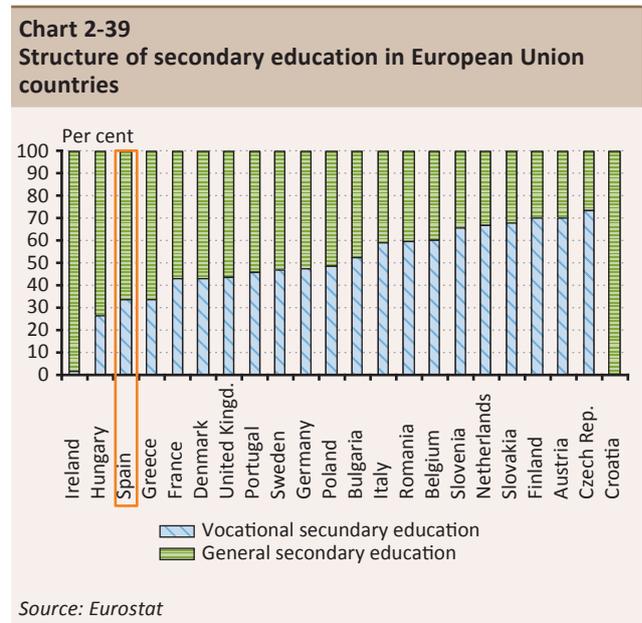
reflect a considerable lag in the area of language learning and language skills. About 80 per cent of students participating in secondary school education learn English; this ratio is close to 100 per cent in most EU countries; the ratio of those learning German is also lower than the ratio in the Central and Eastern European countries (Chart 2-37). The number of languages spoken in Hungary is low: more than 60 per cent of the population speaks no foreign languages at all, and only one-quarter of the population speaks at least one foreign language (Chat 2-38). Increasing the role of language education may also contribute to decreasing the number of those higher education students who do not obtain their degree due to the lack of a language exam certificate. In 2012, altogether 22,000 students – of these 12,000 students in full-time education – failed to obtain their degree due to the lack of a language certificate (HCSO, 2012).



In addition to the ratio of holders of a higher education degree, there is also a significant lag in the number of participants in vocational training in secondary education compared to other EU countries. This can limit economic growth as enterprises state the lack of skilled labour as the limit to increasing production in different surveys. For example, based on the survey of ManpowerGroup (ManpowerGroup, 2015), since the beginning of the survey in 2010 Hungarian enterprises have stated that jobs with vocational training are the most difficult to fill, which is attributable to the lack of skilled workers with vocational training.

In Hungary, the ratio of those participating in vocational training in the secondary education

system is low by European standards (Chart 2-39). In Hungary, one quarter of secondary-level students took part in vocational training in 2013, whereas in other EU countries this ratio was around 50 per cent. In countries where vocational training works successfully, the school system places greater emphasis on the development of general skills. Schools participating in vocational training provide more general knowledge and are stronger in the field of development of competences than in Hungary. They provide a much more convertible knowledge, with which students can better adapt to the labour market demands of the changing world. For example, students in vocational training in Germany begin to take part in vocational training after 7,155 or 7,950 general lessons, while in Hungary only 5,742 lessons are used to teach general skills (EC, 2014).



### 2.2.3 QUALITY OF EDUCATION IN HUNGARY

One frequently used measure of the quality and applicability of the knowledge obtained in the public education system is the average scores achieved in the PISA tests, which is based on the measurement of students' performance. The test examines the capabilities of 15-year old students in the area of mathematics, reading and sciences. The test results assess the knowledge obtained first of all in the primary school and, to a lesser degree, in secondary school. The role of secondary school education is also of the utmost importance, because for most employees this is the

highest school qualification before entering the labour market, and it also lays the foundation for entering the higher education system.

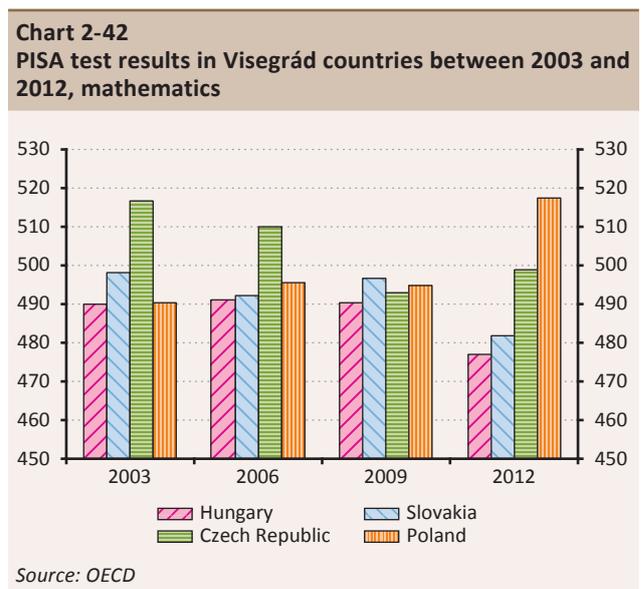
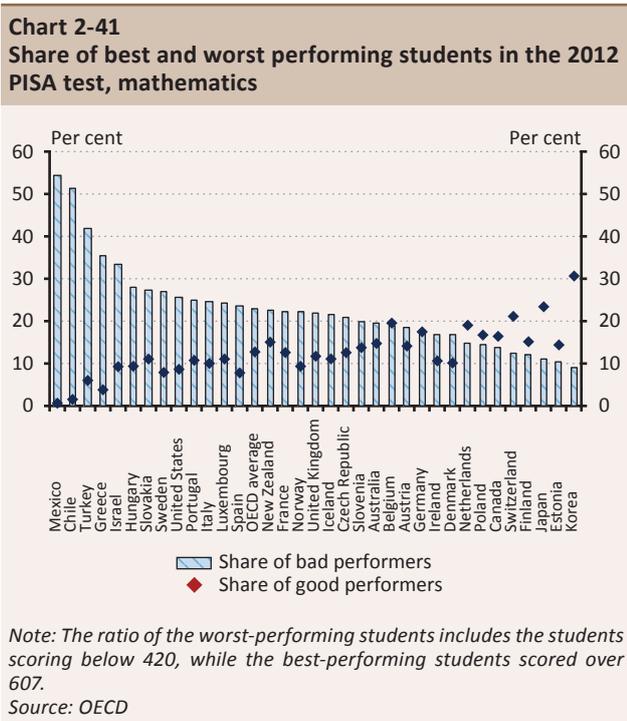
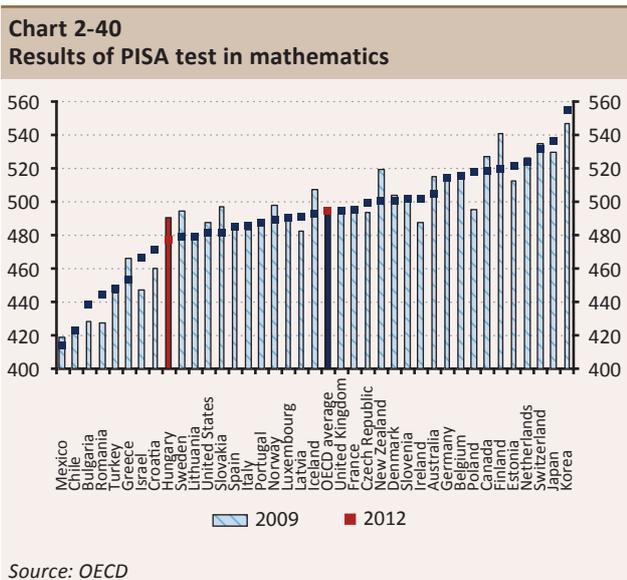
**Based on the results of the latest PISA test of 2012, the performance of Hungarian students lagged behind the average of the OECD countries in all three areas and compared to the 2009 test results the average score achieved decreased in each area.** The largest shortfall can be seen in the area of mathematics, where the 2012 Hungarian result fell

short of the OECD average by 17 points and the result decreased by 13 points compared to 2009 (Chart 2-40).

**Behind the average score, a significant dichotomy can be found.** In Hungary, the ratio of the best performing students was 9 per cent, while it was 13 per cent in the OECD countries. **The ratio of the students performing the worst in the mathematics test was extremely high in an international comparison (28 per cent in 2012),** (Chart 2-41). The Hungarian result was the 6th weakest result among the OECD countries. In Hungary, the social and economic status of the students' parents was the explanation for the 23 per cent difference measured in the students' performance, which is significantly higher than the average value of 15 per cent applicable to the OECD countries. This suggests that in Hungary the family background of the students' performance has a stronger influence on the students' performance compared to the OECD countries and it is more difficult for the students from socially disadvantaged families to achieve a high score.<sup>49</sup>

**Of the Visegrád countries, the Hungarian test results were among the weakest in the area of mathematics.** In Poland, starting from the same initial level, the average test results have increased by almost 30 points since 2003 (Chart 2-42). In the other areas the shortfall is smaller in an international comparison: in reading and sciences Hungarian students' scores fell short of the OECD average by 6 and 7 points, respectively.<sup>50</sup>

**In the area of problem solving, the average PISA test result was extremely poor in Hungary in 2012.**



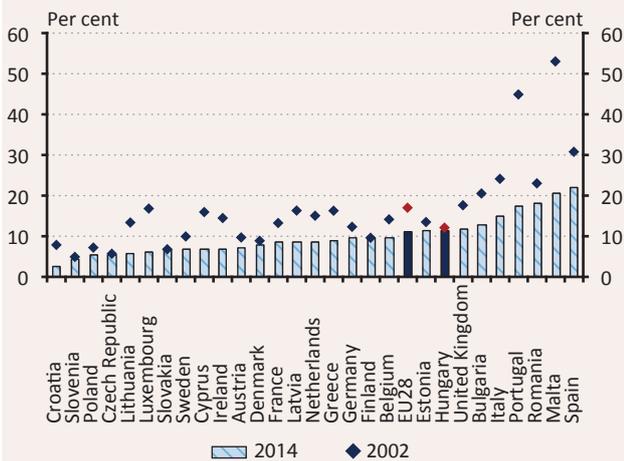
<sup>49</sup> OECD (2014)

<sup>50</sup> OECD (2014)

The Hungarian test result fall significantly behind the OECD average and is also lower than the result of the other Visegrád countries. The ratio of poorly performing students was 35 per cent in Hungary, substantially exceeding the average value of 21 per cent for the OECD countries. Based on the result, Hungarian students also had a significant shortfall in the area of problem solving not directly related to the curriculum. Poor problem solving skills make future employment in the labour market more difficult.

**The ratio of early school leavers is high in Hungary by regional standards.** In the age group of 18-24, this indicator shows the ratio of persons who do not hold a secondary school qualification and are not participating in education or training. On the whole, this ratio has decreased since the millennium from 13.9 to 11.4 per cent by 2014, but in the recent years the ratio slightly increased. The Hungarian indicator is twice as high as the typical average value of the other Visegrád countries (Chart 2-43). Leaving school without obtaining a secondary school qualification makes employment in the labour market and social convergence more difficult. By decreasing this ratio, the social situation of employees and the quality of the labour force could improve.

**Chart 2-43**  
Ratio of early school leavers among the population aged 18-24 in EU countries

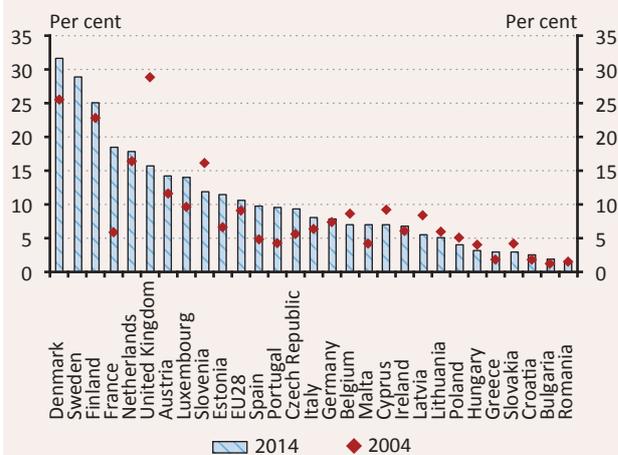


Source: Eurostat

**The accumulation of human capital usually continues after obtaining the school qualification outside the school system,** for example in the form of on-the-job training or adult education programmes. Technological progress increases the role of lifelong learning, which

brings employees closer to the changing requirements demanded by the economy by acquiring new knowledge and developing skills and competences.<sup>51</sup> In 2014, 3.2 per cent of the Hungarian population aged 24–64 years participated in some sort of training programmes within the four weeks preceding the survey, which is less than one-third of the average value (10.7 per cent) in the 28 EU member states (Chart 2-44). In the EU member states, the ratio of persons participating in adult education is particularly high in the Scandinavian countries, at 25–32 per cent in 2014.

**Chart 2-44**  
Participation in lifelong learning in the EU countries

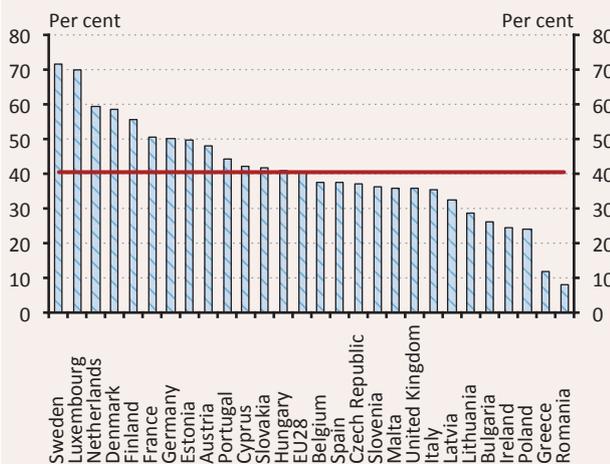


Note: The graph shows the ratio of persons aged 25 to 64 who received education or training in the four weeks preceding the survey according to the Labour Force Survey.  
Source: Eurostat

The situation is different in Hungary, when examining the data related to participation in the last 12 months preceding the survey. **In Hungary, the ratio of persons who participated in some sort of training within the last 1 year preceding the survey in 2014 was 41 per cent, which is slightly higher than the EU average** (Chart 2-45). This latter high value is explained by the fact that in the survey the probability of finding an individual who participated in training within one year is higher than finding one who participated within four weeks. When examining participation by age, it is clear that the highest participation rate is among those aged 25–34 years, and it is the lowest in the age group of 55–64 years. The level of school qualification is also one of the determining factors in participating in adult education: the higher education graduates participate in education or training to a much higher degree than those with low qualification (Chart 2-46).

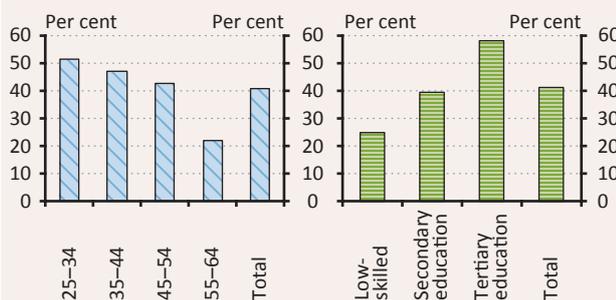
<sup>51</sup> HCSO (2004)

**Chart 2-45**  
Participation in lifelong learning in the EU countries



Note: The graph shows the ratio of persons aged 25 to 64 who received education or training in the 12 months preceding the survey according to the Adult Education Survey. Source: Eurostat.

**Chart 2-46**  
Share of participants in education or training by age and educational attainment



Source: Eurostat

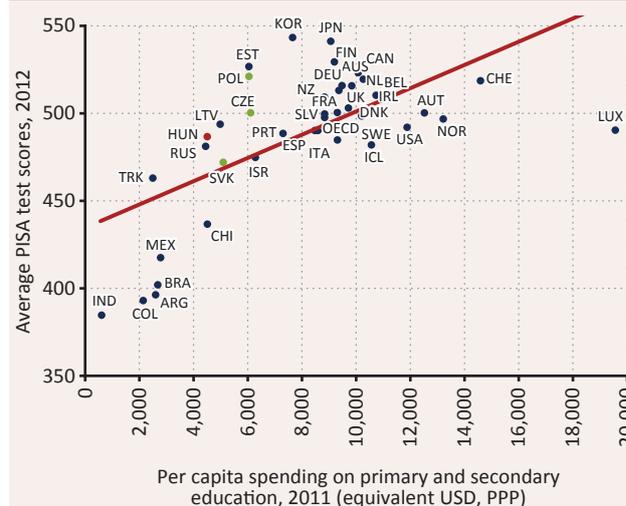
## 2.2.4 EDUCATION EXPENDITURES IN HUNGARY IN AN INTERNATIONAL COMPARISON

The GDP-proportionate education expenditures and per capita average expenditure measure investments in human capital. The size of education expenditures is influenced by several factors: the number of school-age children, which is essentially determined by demographic processes in primary and secondary education, the ratio of those enrolled in school, the wage level of teachers and the financing structure of the education system, i.e. the distribution of fiscal and private funds. Comparing the budgetary education

expenditures of various countries is complicated, due to the different institutional structure, as the ratio of institutions outside the general government may differ significantly from country to country.

The quality of education is affected both by the efficiency of the education expenditures and the level of the expenditures. There is a positive relation between education expenditures and the efficiency of the education system: in countries where a higher portion of gross national income is used for primary and secondary education, the students perform better on average in the PISA tests (Chart 2-47). On the other hand, despite its expenditure level lagging significantly behind the OECD average, Hungary's result was only 10 points lower, which may be attributable to the relative efficiency of public education expenditures.

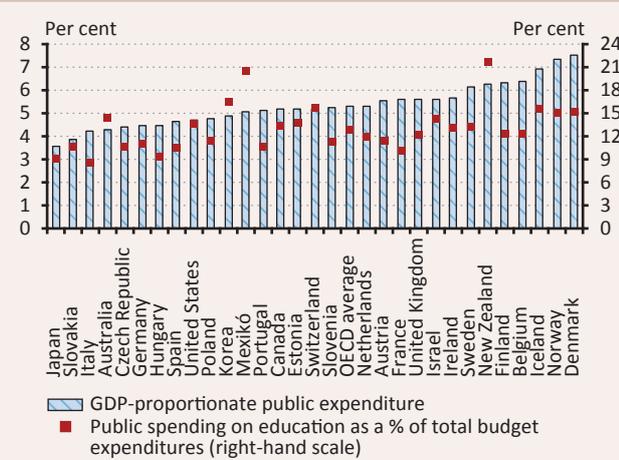
**Chart 2-47**  
Average PISA test scores and per capita spending on primary and secondary education



Source: OECD

The GDP-proportionate rate of budgetary education expenditures was lower in Hungary than the average value of the OECD countries in 2011. At that time, it accounted for 4.4 per cent of GDP, which falls short of the average value of 5.3 per cent observed in the OECD countries (Chart 2-48). In 2011, Hungary spent 9.5 per cent of budgetary expenses on education, which is one of the lowest values in the OECD countries. The Hungarian GDP-proportionate expenditure level is in line with average of the Visegrád countries, but the expenditure expressed as a proportion of budgetary expenses lags behind the average of the Visegrád countries by about 1.5 percentage points as a result of the higher redistribution rate.

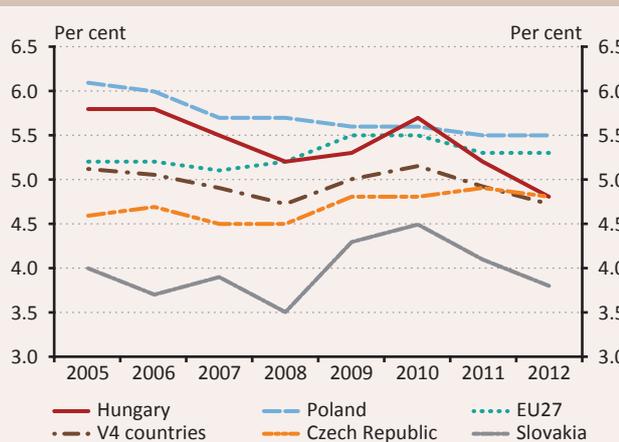
**Chart 2-48**  
Public spending on education in 2011 as a percentage of GDP and as a % of budget expenditures



Source: OECD (2015)

**The budgetary expenses on education – based on the available data – between 2005 and 2012 showed a decreasing trend in Hungary in recent years:** from 5.8 per cent measured in 2005 they declined by 1 percentage point by 2012, while the average value characterising the 27 EU member states has essentially stagnated. The budgetary adjustments triggered by the economic crisis necessitated the reduction of the education expenses in several European countries, including Hungary (Chart 2-49). The adjustments impacted the expenses related to primary and

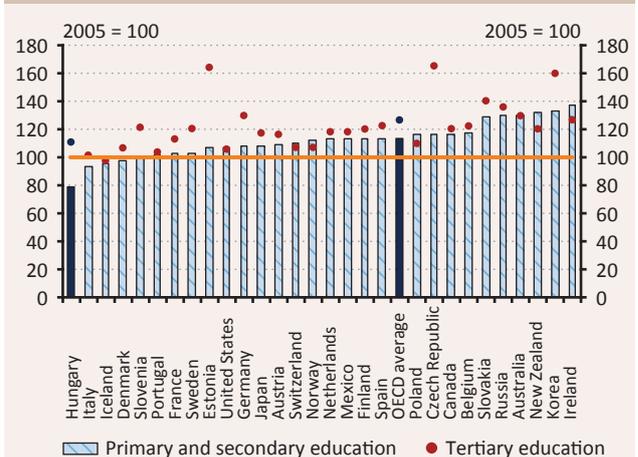
**Chart 2-49**  
Developments of public spending on education between 2005 and 2012 as a percentage of GDP



Sources: Eurostat, COFOG database

secondary education to the largest degree in Hungary: expenses in real terms fell by more than 20 per cent between 2005 and 2011 (Chart 2-50). Meanwhile, the budgetary expenses spent on higher education increased by 12 per cent. The decrease in the public education expenditure may partially be attributable to demographic processes: in Hungary between 2005 and 2011 the school-age population decreased by 180,000 from 2.3 million, i.e. by roughly 8 per cent.<sup>52</sup> Finally, it should be noted that as a result of the actions implemented after 2012 (for example the teachers' career path model started in 2013) public spending on education started to increase: spending on education is expected to be 4.9-5 per cent of GDP in 2015.<sup>53</sup>

**Chart 2-50**  
Change in spending on educational levels between 2005 and 2011



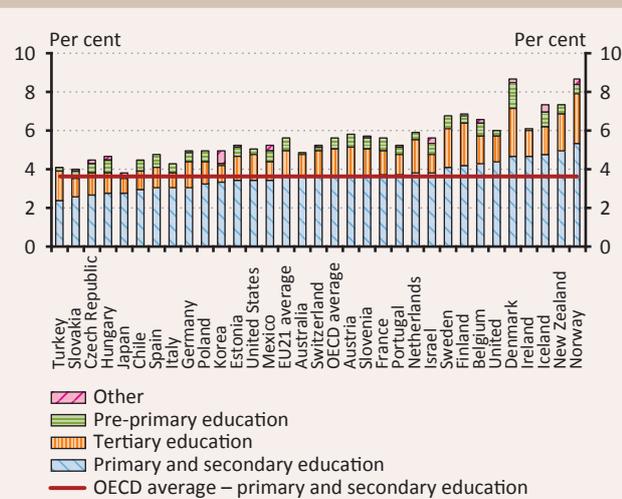
Note: At constant prices.  
Source: OECD (2014)

**The degree of education spending shows a significant difference by education levels.** In the OECD countries, expenses for primary and secondary education account for two-thirds of education spending; this rate is lower in Hungary, at 58 per cent. There is also a significant shortfall as regards the GDP-proportionate expense level spent on primary and secondary education institutions: the Hungarian value falls short of the OECD average of 3.6 per cent by about 1 percentage point (Chart 2-51). The Hungarian budget allocates 1.1 of GDP to higher education, which is a smaller shortfall in an international comparison than that in public education. Taken together, the budgetary resources available for the education system are

<sup>52</sup> Source: HCSO (2015). The school-age population includes the inhabitants aged 3-22 years.

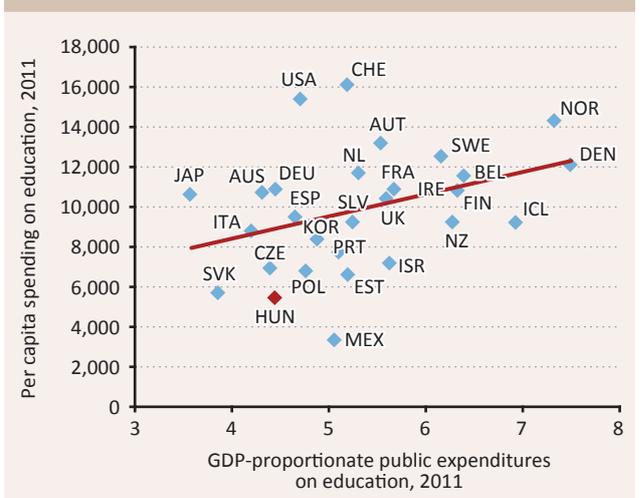
<sup>53</sup> Public spending on education equals to 4.8 per cent of GDP in the 2015 Budget Bill compared to which spending on education can be slightly higher, by about 0.1 per cent of GDP this year.

**Chart 2-51**  
Total expenditure on education by level as a per cent of GDP, 2011



Note: The graph shows direct public expenditure on educational institutions plus public subsidies to households.  
Source: OECD (2014)

**Chart 2-52**  
Expenditure per student by educational institutions and public spending on education as a percentage of GDP, 2011



Note: Public institutions only for Ireland, Poland, Hungary, Italy, Portugal and Switzerland.  
Sources: OECD (2014), OECD (2015)

low by international standards: the public sector spending on primary, secondary and higher education in Hungary correspond to the average expenditure level of the OECD countries allocated to primary and secondary education.

**The GDP-proportionate budgetary expenditures of an identical level contain different per capita expenditures** (Chart 2-52). Analysis of per capita expenditure level is also justified by demographic processes, due to the decreasing size of the school-age population. In the countries characterised by almost the same amount of GDP-proportionate public sector spending as in Hungary – for example in Germany and the Czech Republic – the per capita expenditure is materially higher, which may be attributable to the higher private resources and higher per capita GDP. The degree of economic maturity may significantly contribute to the difference in education spending: in 2011 Hungary spent 24 per cent of per capita GDP on education, which was close to the value of 27 per cent characterising Germany and the OECD countries, and exceeded the rate of 23 per cent applicable to Slovakia.<sup>54</sup>

**The per capita expenditure in Hungary corresponded to 57 per cent of the average value for the OECD**

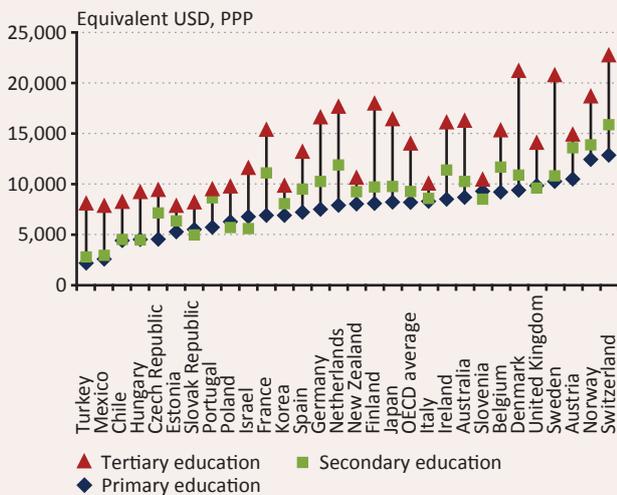
**countries in 2011.** Broken down to the types of education, the per capita expenditure shows the largest lag in an international comparison in secondary school education: in 2011 Hungary spent 49 per cent of the OECD average per student (Chart 2-53). Based on the international data, the higher level of education is also accompanied by higher costs; as opposed to this Hungary spends essentially the same per capita amount in the primary and secondary school education. **Compared to Poland, a country of similar level of economic maturity, the per capita education expenditure in Hungary shows a 20 per cent lag in 2011.** The per capita average expenditure of Hungary is one of the lowest in the OECD countries; only Mexico, Turkey and Chile have a lower level of expenditure.

**Per capita expenditure in higher education is 34 per cent lower in Hungary than the OECD average,** which may partially be attributable to the lower R&D expenses. The level of per capita expenditure is also influenced by the average duration of education: in countries where the average duration of educational programmes is longer, the annual per capita expenditure is lower.<sup>55</sup> In addition, the lower share of the private funds may also contribute to the fact that the expenditure level in Hungary is below the OECD average.

<sup>54</sup> OECD (2014)

<sup>55</sup> OECD (2014)

**Chart 2-53**  
Spending on education per student by levels, 2011

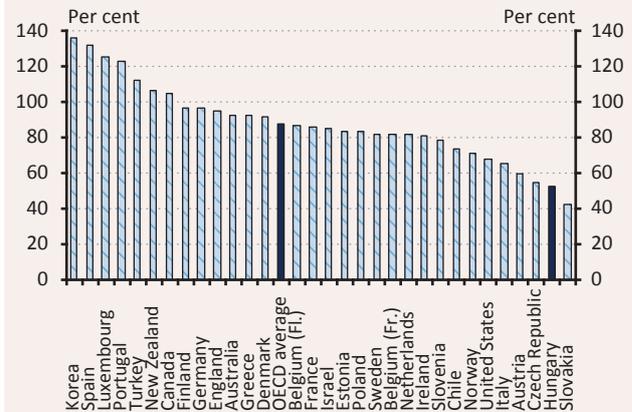


Note: Public institutions only for Ireland, Poland, Hungary, Italy, Portugal and Switzerland.  
Source: OECD (2014)

**Based on the international trends, private funds account for an increasing share in higher education,** which contain, amongst others, the households' expenses (e.g. tuition fee) and the expenditures of the enterprises. In the OECD countries the level of private expenditures almost doubled in real terms between 2000 and 2009, while the share of the private funds in higher education expenditures rose from 23 per cent in 2000 to 30 per cent by 2009.<sup>56</sup> The values behind the average show strong variance: for example, the share of private funds in South Korea and Great Britain was around 70 per cent, while in the Scandinavian countries it was merely 4-10 per cent in 2011.<sup>57</sup> As regards the entire educational system, higher education is the level where the ratio of the private funds is the highest. In Hungary – based on the latest available data – the private expenditure spent on educational institutions represented 0.5 per cent of GDP in 2006, which is roughly a 9 per cent share in the total education expenses, slightly lagging behind the EU countries' value around 12 per cent.<sup>58</sup>

**A significant part of education expenditure is accounted for by teachers' salary, which on the whole still shows a shortfall in Hungary by international standards.** The salary of secondary school teachers working in public education institutions amounted

**Chart 2-54**  
Teachers' salaries relative to earnings for tertiary-educated workers aged 25-64 in secondary education, 2012



Note: The data does not contain the effect of the wage increase of teachers which is implemented in Hungary from September 2013.  
Source: OECD

to roughly half, i.e. 53 per cent, of the average wage of degree-holder employees in 2012. This ratio is the lowest after Slovakia among the OECD countries, where the average value in 2012 was 88 per cent. There is also a significant lag when examining the absolute wage level: the salary of secondary school teachers with 15 years' work experience was USD 13,500 on average in Hungary, which corresponds to one-third of the average characterising the OECD countries (Chart 2-54). Compared to the Visegrád countries, there is a much lower, 25 per cent shortfall in teachers' salary. Recognising this, in September 2013 the government launched the teacher career path model to make the teaching profession more attractive, which will result in a wage increase of 40 per cent on average for teachers between 2013 and 2017.

**There is a positive relation between teachers' wage level and students' PISA test results in mathematics** in countries where per capita GDP exceeds USD 20,000.<sup>59</sup> There is no such relation in the countries that are less developed than that, suggesting that even the resources necessary for education are not available. In the long run, the increase in teachers' wage may also contribute – in addition to improving the quality of education – to making the teaching profession attractive for an increasing number of capable students.

<sup>56</sup> OECD (2012)

<sup>57</sup> The OECD database contains no data with regard to Hungary.

<sup>58</sup> Eurostat (2015)

<sup>59</sup> OECD (2014)

## 2.3 State of health

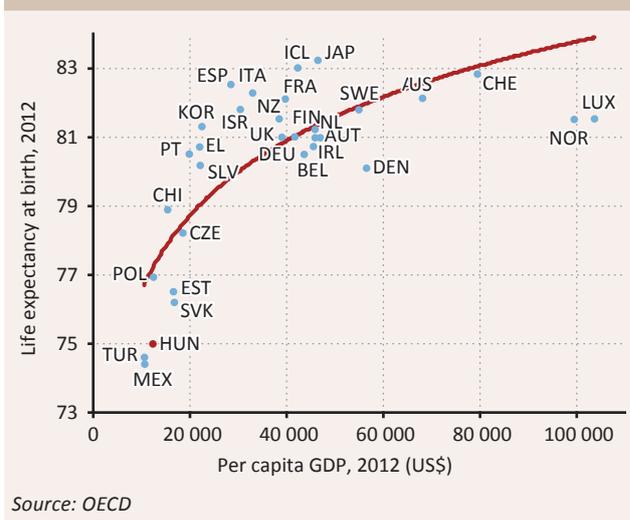
### 2.3.1 STATE OF HEALTH IN HUNGARY

In addition to the knowledge obtained in education, the population's state of health also forms part of the human capital stock and may contribute to economic growth through several channels.<sup>60</sup> On the one hand, the state of health has a strong influence on labour market participation (the size of the labour force) and productivity, and thus improving the state of health may result in higher per capita income. Healthy employees are less likely to be absent from work due to illness and in older age they are able to stay in the labour market longer. In the European countries absence due to illness accounts for 3-6 per cent of annual working time and its annual cost corresponds to 2.5 per cent of GDP.<sup>61</sup> The working days worked sick result in lower productivity. On the other hand, a healthy society is able to accumulate higher physical capital. The higher life expectancy increases the years in retirement and a higher saving ratio to ensure consumption in old age, and thus results in higher capital accumulation.<sup>62</sup> In addition, per capita physical capital may also rise because the increase in healthy employees' labour input may add to the marginal product of capital.<sup>63</sup> Thirdly, as a result of higher life expectancy, investment in education may also be larger, as the longer lifetime increases the return on investment.<sup>64</sup>

The state of health may be captured the easiest by the life expectancy of the population. However, there is a bidirectional relation between the state of health and economic growth, as the richer countries may allocate a higher portion of their gross income to healthcare expenditure, they live under better conditions of life and their health awareness may be higher. Based on the Preston curve, per capita GDP

is one of the determinants of the state of health: the higher the per capita income is, the higher the life expectancy will be (Chart 2-55). Based on the shape of the curve, a rise in GDP boosts the life expectancy to a larger degree in low-income countries than in high-income countries.

Chart 2-55: Preston curve on the data of the OECD countries, 2012



Source: OECD

Rising life expectancy has a significantly positive impact on economic growth. In terms of economic growth, the level of life expectancy<sup>65</sup> and the rate of increase are both important. If we treat health as a component of human capital, i.e. a factor of production, we should assume a correlation between GDP growth and an improvement in the state of health, i.e. an increase in life expectancy.<sup>66</sup> Based on another approach, the state of health increases GDP via technological innovation, and thus productivity growth moves closely together with the state of health, i.e. the life expectancy value.<sup>67</sup>

<sup>60</sup> Bloom et al., (2004)

<sup>61</sup> EC (2013)

<sup>62</sup> Jack and Lewis (2009)

<sup>63</sup> Weil (2007)

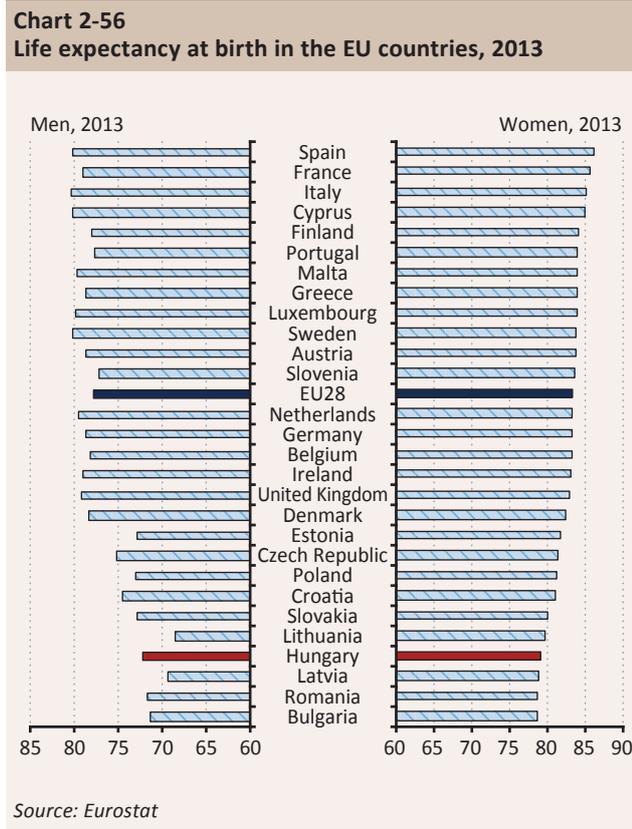
<sup>64</sup> Jayachandran and Lleras-Muney (2008)

<sup>65</sup> The life expectancy is the average number of years an individual is expected to live based on his/her age and gender, if the age-specific mortality rates observed in the given period remain in force during the remaining years of the given individual (Wilkie and Young, 2009).

<sup>66</sup> Mankiw et al. (1992).

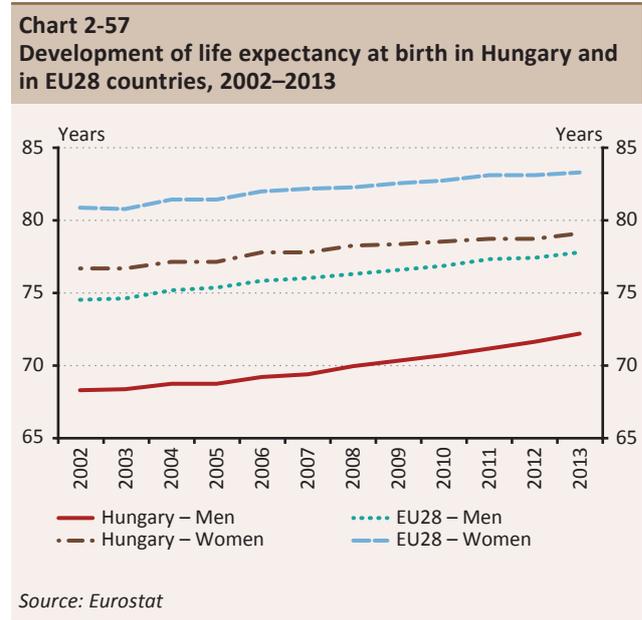
<sup>67</sup> Aghion et al. (2010).

Aghion et al. (2010) explained the growth rate of per capita GDP using changes in life expectancy, the life expectancy at the start of the period and the initial per capita GDP with data on 96 countries between 1960 and 2000. Based on their results, the initial level and the increase rate in life expectancy both have a significant positive impact on the per capita GDP growth rate. According to the results of Bloom et al. (2004), an increase of 1 year in life expectancy results in GDP that is 4 per cent higher in the long run.



**The Hungarian population's state of health is poor by international standards** and lags behind the level that would be justified on the basis of Hungary's economic maturity (Chart 2-56). In Poland, where per capita GDP is almost identical with that of Hungary, life expectancy at birth is longer by about 2 years on average. Life expectancy at birth has gradually increased in Hungary in recent decades, but the Hungarian value is still one of the lowest in the European Union (Chart 2-56). In 2013, the life expectancy at birth of women and men was 79 and 72 years, respectively, in Hungary. These values lag behind the average of the 28 EU member states, by 6 years in the case of men and

4 years in the case of women (Chart 2-57). In terms of life expectancy only Latvia, Lithuania, Romania and Bulgaria lag behind Hungary in the EU.



**In Hungary, a major part of the increase in life expectancy is attributable to the decrease in the mortality rate of generations younger than 65 years.** In most EU countries, however, the increase in life expectancy is attributable to the fact that elderly people live longer.<sup>67</sup> In Hungary, men's life expectancy at birth increased from 65 years to 72 years between 1990 and 2013. Less than 1 year of the increase in life expectancy was attributable to the decrease in infant mortality, while an increment of 1.5 years is the result of the decrease in the mortality rate of the population older than 65 years.<sup>68</sup> The decrease in premature (below 65 years) deaths increased men's life expectancy at birth by 5 years between 1990 and 2013 and a significant part of the improvement related to the age group of 40-64 years. Women's life expectancy at birth increased by 5 years between 1990 and 2013, half of which was the result in the lower mortality rate of the population over 65, but the life expectancy of young adults and of the middle-aged also improved.

**On average, the Hungarian population can expect fewer years in their life in good health than the inhabitants of the EU countries, but this indicator still reflects a more favourable picture than life expectancy at birth (Chart 2-58).** The healthy life

<sup>67</sup> KSH (2010)  
<sup>68</sup> Bálint és Kovács (2015)

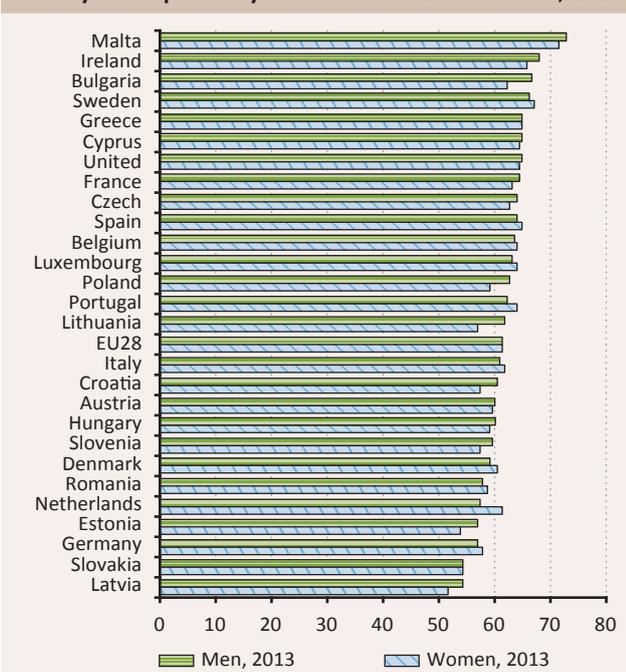
expectancy shows the number of years that an average individual is expected to spend at a given age free from health-related disabilities.<sup>69</sup> While Hungary ranks 24-25th among the EU countries in terms of life expectancy at birth, in the healthy life expectancy ranking it takes the 20th position, preceding – amongst others – Denmark and Germany. Despite the fact that the life expectancy at birth is 7 years longer in the case of women than for men, there is only 1 year difference in the healthy life expectancy of women and men in Hungary. This is due to the fact that the number of years spent in a disabled health status requiring treatment, is lower in the case of men than in the case of women. The average value of Hungary lags behind the average related to the EU countries only by 1.5-2 years. The healthy life expectancy at the age of 65 in Hungary precedes only 5 EU countries (Romania, Lithuania, Estonia, Latvia and Slovakia).

During the same period, the average healthy life expectancy slightly decreased in the EU countries, but it still exceeds the Hungarian value. In the case of men the life expectancy at birth increased by 3.5 years between 2005 and 2013, while the healthy life expectancy increased by 7 years on average. Taken together, in recent years Hungary’s lag compared to the EU countries has significantly decreased in terms of the healthy life expectancy.

**In Hungary, the most frequent causes of death are related to cardiovascular diseases and malignant tumours.** In 2012, cardiovascular diseases were the most frequent causes of death of men, with the number of deaths per 100,000 twice as high as the average of the EU member states (Table 2-6.a and 2-6.b). The Hungarian ratio also exceeds the ratio observed in the other Visegrád countries. Malignant tumours represent the second most frequent cause of death within the total population of men, while among the inhabitants below 65 (premature death) this is the most frequent cause of death. Within the Hungarian population, the mortality rate of men substantially exceeds that of women. Women’s mortality rate also exceeds the average value of the EU countries and of the other Visegrád countries. The number of deaths due to cardiovascular diseases was twice as high as the EU average in 2012. In the case of women below 65 malignant tumours is the leading cause of death.

**The potential years of life lost in Hungary is high in an EU comparison.** The potential years of life lost is one indicator of premature mortality, as it reflects the

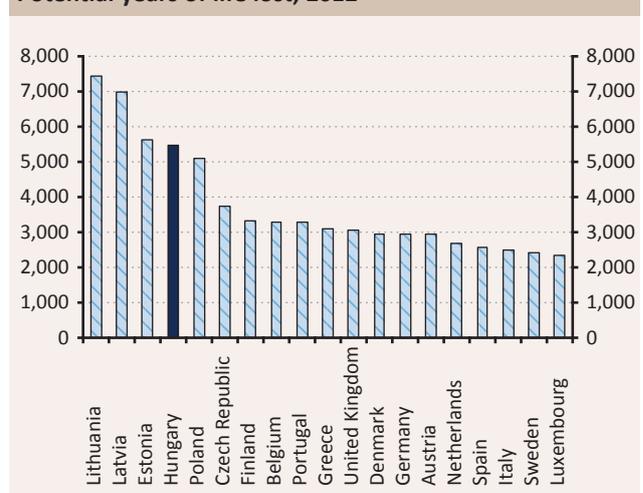
**Chart 2-58**  
Healthy life expectancy at birth in the EU countries, 2013



Note: Sorted by the life expectancy of women.  
Source: Eurostat

**The Hungarian figures suggest that the population’s state of health is improving year after year.** Between 2005 and 2013, women’s life expectancy at birth increased from 77 to 79 years, while the healthy life expectancy at birth increased from 54 to 60 years. This suggests that in Hungary the healthy life expectancy increased at a higher rate than life expectancy.

**Chart 2-59**  
Potential years of life lost, 2012



Source: OECD (2015)

<sup>69</sup> HCSO (2015)

**Table 2-6.a**  
Standardised mortality rates in Hungary and Visegrad countries for men, 2012

Total population	Total	Diseases of the cardiovascular system	Malignant neoplasms	Diseases of the respiratory system
EU28	1281	462	358	117
Czech Republic	1656	834	399	105
Poland	1767	814	423	116
Hungary	1940	944	505	121
Slovakia	1862	837	461	139
Under age 65	Total	Diseases of the cardiovascular system	Malignant neoplasms	Diseases of the respiratory system
EU28	297	73	97	12
Czech Republic	359	107	108	16
Poland	506	151	127	17
Hungary	561	172	190	24
Slovakia	467	133	134	21

Note: Number of deaths per 100 thousands inhabitants.  
Source: Eurostat

**Table 2-6.b**  
Standardised mortality rates in Hungary and Visegrad countries for women, 2012

Total population	Total	Diseases of the cardiovascular system	Malignant neoplasms	Diseases of the respiratory system
EU28	849	340	204	63
Czech Republic	1088	610	232	54
Poland	1031	542	224	48
Hungary	1215	670	271	56
Slovakia	1186	621	233	60
Under age 65	Total	Diseases of the cardiovascular system	Malignant neoplasms	Diseases of the respiratory system
EU28	146	25	69	6
Czech Republic	162	35	72	7
Poland	195	44	86	7
Hungary	245	59	109	12
Slovakia	187	40	79	7

Note: Number of deaths per 100,000 inhabitants.  
Source: Eurostat

average years of life lost before the conventionally expected average lifetime (70 years, based on international practice).<sup>70</sup> Based on Eurostat data in 2012 there was 5,464 years of life lost for 100,000 persons in Hungary, that is this many years were lost due to the fact that not everybody lived until the age of 70 (Chart 2-59). This is one of the highest values in Europe after the

Baltic states. In Hungary, there is significant difference between the genders: men lose almost twice as many years of life from the potential 70 years as women.

**The Hungarian mortality rate, which is high by international standards, and the number of potential years of life lost, call attention to the importance**

<sup>70</sup> At present the commonly accepted value is 70 years, that is the indicators show the number of years not lived by the deceased of the potential lifetime of 0-70 years (Health Strategic Research Institute 2015).

**of preventive medicine and screening tests.** By strengthening the role of preventive medicine, health expenses on chronic illnesses may decrease over the long run and the number of healthy years of life may be increased.

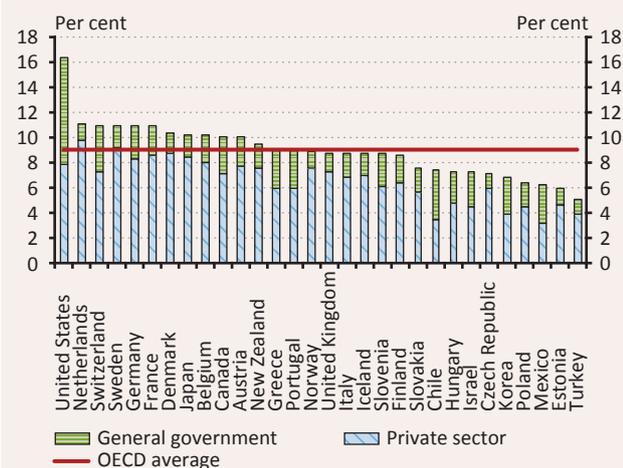
**Health status can be improved not only directly via healthcare services, as health status is influenced by many other factors.** Health status is influenced by the social and economic environment, the physical environment, the individual’s way of life and access to healthcare.<sup>71</sup> As regards the social and economic environment, higher income level and social status is accompanied by better health status and the life expectancy of those with higher school qualifications typically exceeds the life expectancy of the low-skilled. The physical environment includes the quality of potable water and air quality, and living and working conditions. The way of life factors are influenced by sports, proper nutrition, as well as the degree of alcohol consumption and smoking. In addition, the healthcare system plays an important role in the prevention and treatment of illnesses.

**The way of life factors may be determinant in the Hungarian population’s poor health status,** as the ratio of alcohol consumption and smoking, as well

the ratio of overweight persons, is high in Hungary compared to the EU average. According to the results of Lackó (2010), Hungarian men’s poor health status is attributable to the above, lifestyle related reasons, but the extra work at the expense of the leisure time (second job) also plays a role.

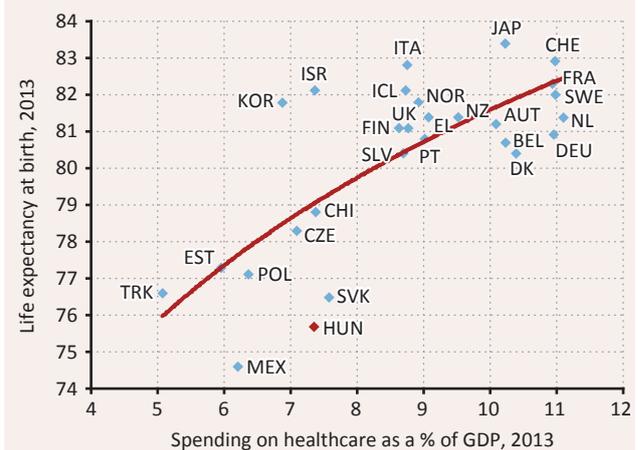
**In Hungary, healthcare expenditures are below the average in an international comparison. Healthcare expenditures are productive budgetary expenditures,** as the expenses spent on the health of the working-age population may increase the healthy life expectancy and thereby also the number of years spent in work. The low level of the healthcare expenditures may also contribute to the poor health status. In Hungary, on aggregate 7.4 per cent of GDP was spent on healthcare in 2013 from private and public funds; this value lags behind the average value of 9 per cent applicable to the OECD countries. In Hungary, the ratio of private funds slightly exceeds the international average, while the level of budgetary expenditures is lower than the OECD average. There is a positive relation between the GDP-proportionate healthcare expenditures and life expectancy at birth (Chart 2-61). By improving the efficiency of the healthcare expenses and increasing the expenditures the Hungarian population’s health status may be further improved.

**Chart 2-60**  
Public and private spending on healthcare as a percentage of GDP, 2013



Source: OECD

**Chart 2-61**  
Life expectancy at birth and spending on healthcare as a percentage of GDP in the OECD countries, 2013

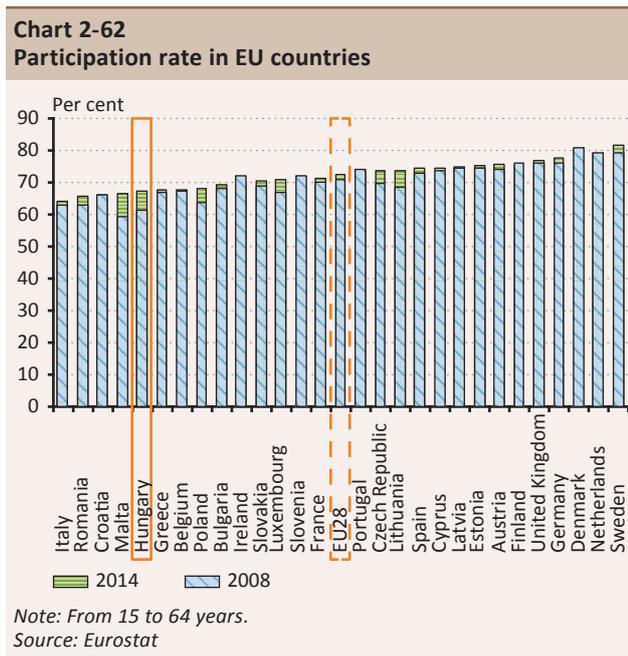


Source: OECD

<sup>71</sup> World Health Organisation (2015).

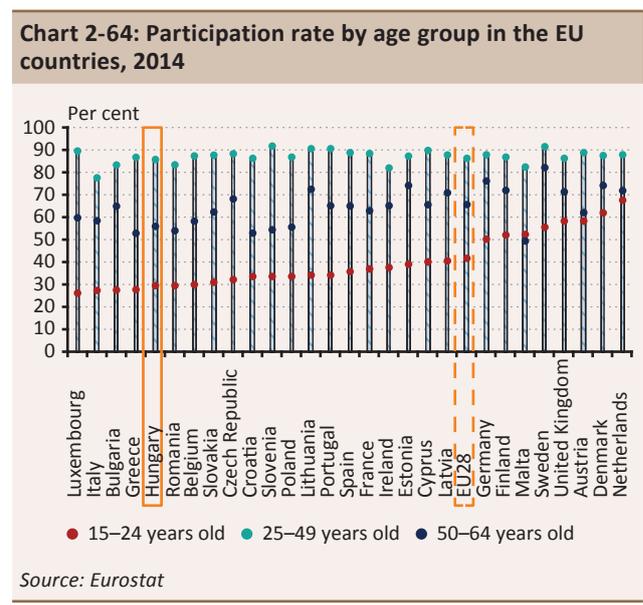
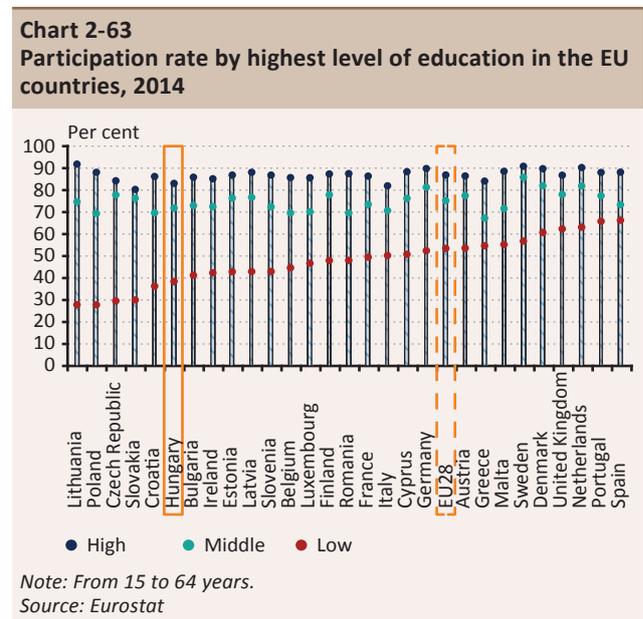
## 2.4 Participation rate in Hungary in an international comparison

The participation rate in Hungary (for the age group of 15–64 years) increased significantly after the crisis. In 2008, 61.2 per cent of the working-age population participated in the labour market actively, but this ratio had already risen to 67 per cent in 2014 (Chart 2-62). The sharp increase in public work programmes, the tightening of the allowance system and certain employment incentive schemes (Job Protection Action Plan, First Job Guarantee) may all have facilitated the increase in the labour force participation rate. However, despite the improvement, the Hungarian participation rate still lags considerably behind the EU countries.



In addition to the difference arising from the composition of the population, the current lag in the participation rate in Hungary is attributable to differing participation rates in certain social groups. While demographic factors can be influenced only over the long run, groups with lower participation rates can be encouraged by various employment policy instruments over the shorter term as well. Hence it is important to identify those main groups where the participation rate lags behind the EU average.

Examining the participation rate by education level, it can be stated that the lower educated belong to the group of the most disadvantaged EU-wide; they appear in the labour market at a lower rate from the outset as their employment opportunities are worse and they are linked more loosely to the labour market. In Hungary, despite the growth in recent years,

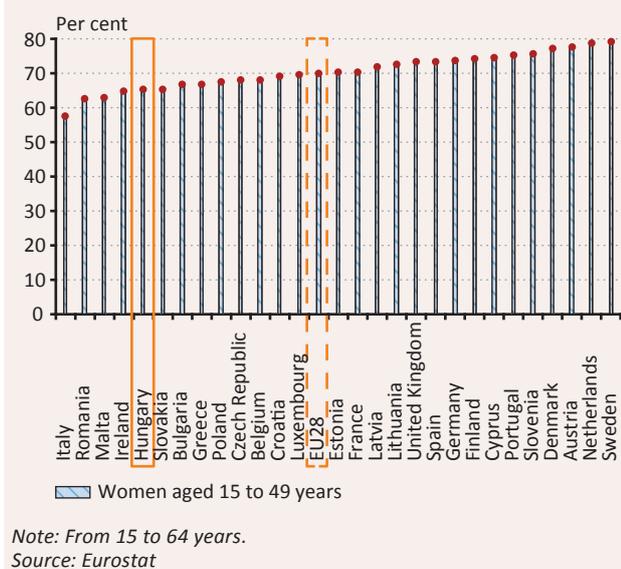


the participation rate of the lower educated in 2014 still lagged significantly behind the EU average, while the lag in Hungary is much smaller at other education levels. (Chart 2-63).

Examining the participation rate by age groups, it can be stated that the participation rate of both the young generation (aged 15–24 years) and those over 50 significantly lagged behind the EU average in 2014 (Chart 2-64). There is no lag in the age group of 25-49 years.

Looking at the labour market participation of women, we find that in Hungary the participation rate of women of child-bearing age (young and middle-aged) is significantly lower compared to the EU countries (Chart 2-65), although this rate also improved considerably in recent years.

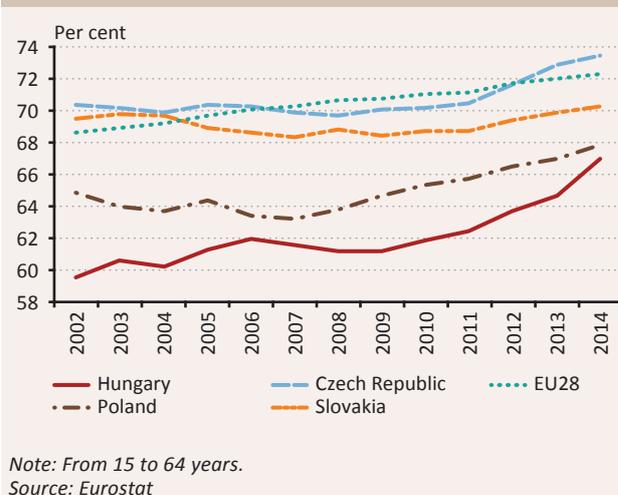
**Chart 2-65**  
Participation rate of women aged 15-49 in the EU countries, 2014



Taken together, it can be stated that Hungary’s participation rate lag is linked primarily to the following groups: the lower educated, the young, persons over 50 and women of child-bearing age.

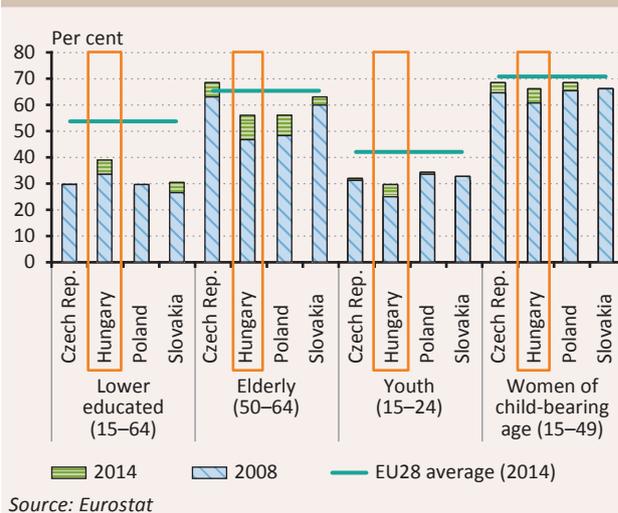
The participation rate in Hungary shows a shortfall not only compared to the European average, but also in comparison with the Visegrád countries, albeit in the case of the latter four countries it is Hungary where the most dynamically improving trend has been seen since the crisis (Chart 2-66).

**Chart 2-66**  
Comparison of the participation rate in the Visegrád Four countries



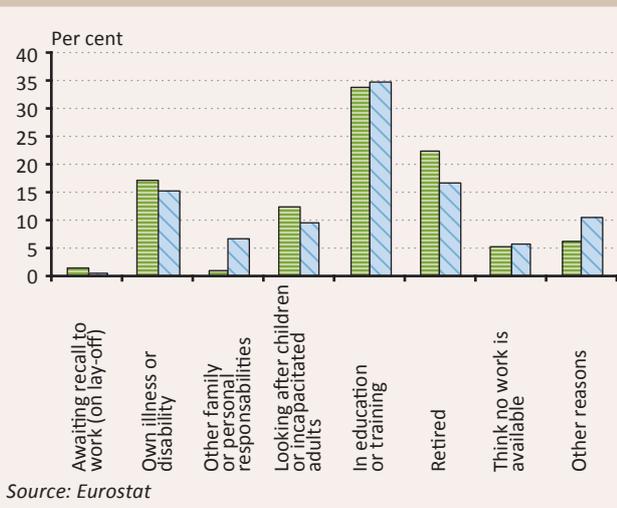
For the purpose of presenting the reasons for the shortfall, we examined the difference in the participation rate of groups with special attributes – the young (aged 15–24 years), women of child-bearing age (aged 15–49 years), those in pre-retirement age (aged 50–64 years) and the lower educated (based on the Eurostat ISCED classification) – in the Visegrád countries compared to the average of the EU 28 (Chart 2-67).

**Chart 2-67**  
Comparison of the participation rate in the Visegrád Four countries



Examining the reasons for being absent from the labour market, the role of those participating in education (typically the younger generation) and of pensioners is striking, which also supports the assumption that these are the most typical inactive groups (Chart 2-68).

**Chart 2-68**  
Proportion of inactive people aged 15–64 by reasons for not seeking employment



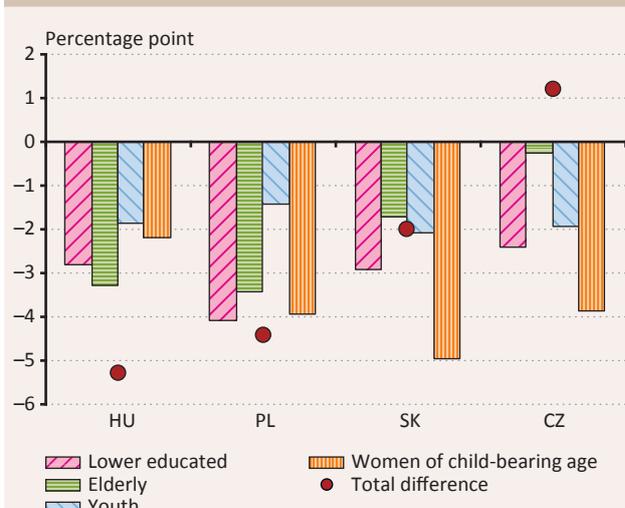
Comparing the EU-28 average with the Hungarian figures, we find that according to the reasons for inactivity the largest difference appears among pensioners; in Hungary the absence due to this reason is higher by almost 6 per cent.

To quantify the contribution of the aforementioned groups, we used the decomposition method described in the study of Kátay and Nobilis (2009).<sup>72</sup> The essence of the method is that we divide our lag measured in the participation rate into two effects (composition of the population and the difference in the participation rate of the individual groups). In calculating the structural difference of the population, we weighted the participation rate of the appropriate groups of the individual countries (of Hungary) with the EU-28 population ratios, and then took the difference from the given group’s actual participation rate.

Chart 2-69 shows the groups that made a major contribution to the difference between the Hungarian participation rate and the EU-28 average. **In Hungary, the largest contribution is made by the lag of the elderly, but the participation rate lag of this group is similarly high in Poland as well.** The contribution of the lower educated and the women of child-bearing age to the lag is significant in all of the Visegrád countries.

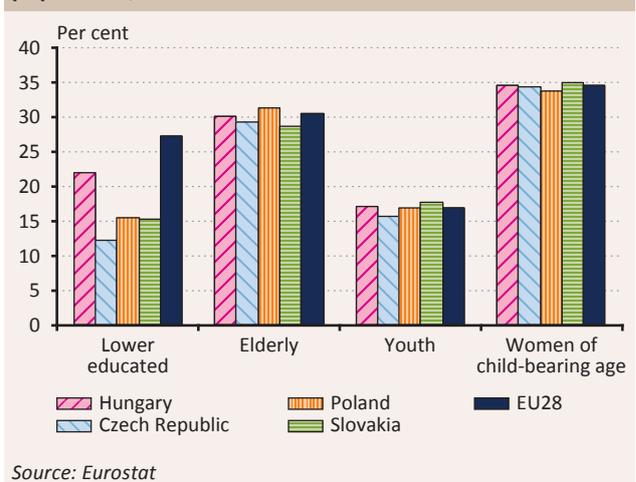
In the individual groups, Hungary’s lag in the participation rate may be also attributable to the composition effect, in addition to the difference in the willingness to participate in the labour market.

**Chart 2-69**  
Contributions by groups resulting from differences in participation rates, 2014



Examining the population ratio of the groups in the Visegrád countries, we find that **in Hungary the ratio of persons with primary school education within the population is significantly higher compared to the other Visegrád countries**, while there is no relevant difference in the other groups (Chart 2-70). Based on this, a relevant composition effect may only appear at those with primary school education.

**Chart 2-70**  
Proportion of different groups in the Hungarian population, 2014



In the following, we examine more thoroughly the factors that may underlie the low participation rate in the four identified groups.

<sup>72</sup> For the decomposition we eliminated the non-respondents, thus the main numbers may differ from the aggregate value published by Eurostat.

### 2.4.1 FACTORS UNDERLYING THE LOW PARTICIPATION RATE OF THE LOWER EDUCATED

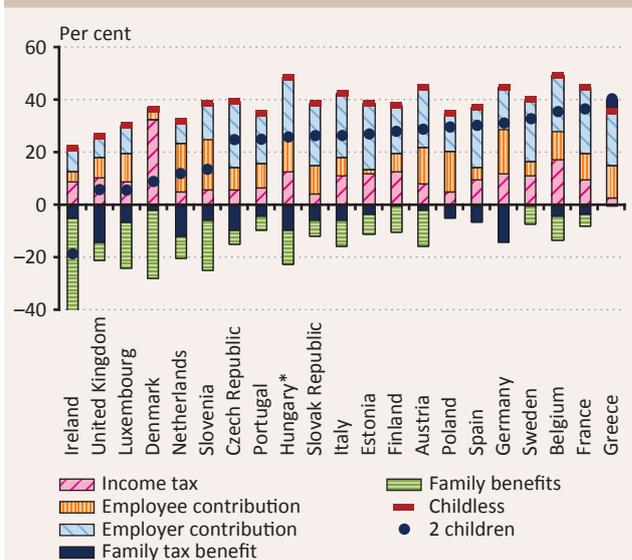
The participation rate of the lower educated is also low by international standards and this may be attributable to several reasons. **On the one hand, the majority of the lower educated do not meet the requirements of the enterprises with vacancies based on their skills (skill mismatch).** The filling of most vacancies (even in low-grade jobs) requires higher level, complex skills, while the lower educated often lack even the basic competences (reading, writing, counting skills, basic computer skills, communication skills) (see the results of the PISA test) and often their attitude to work and to the rules of conduct at work is also not appropriate.

In addition, **there is also a geographical mismatch between vacancies and labour supply.** This labour market difficulty may also impact the lower educated the most, as they are the ones who face a number of difficulties in the area of obtaining information related to work and also in terms of mobility.

In recent years, there were major changes to the tax system, which aimed to lower tax burdens on labour. However, **the overall tax burden on the labour force (tax wedge) is still high in Hungary in an international comparison,** even taking into account the effects of the Job Protection Action Plan (Chart 2-71). The high tax wedge significantly raises enterprises' tax burdens and may therefore hamper labour demand, in particular for the lower educated, because as a result of relatively high employment costs enterprises may substitute labour for capital in the long run, in the case of more simple tasks. If we also take into account family allowances (family tax credit, family allowance), Hungary is located in the mid-range in the international comparison of tax burdens. Family allowances, however, only increase the net income of employees, they do not decrease employment costs for firms. Family allowances thus only encourage labour supply and do not affect labour demand.

**In Hungary, the proportion of minimum wage level to wage average (Kaitz index), which may affect the employment of the lower educated the most, is in the mid-range in an international comparison,** although it belongs to the higher ones among the Visegrád countries (Chart 2-72). The low level of the minimum wage may hamper labour supply, as the

**Chart 2-71**  
Tax wedge of single, childless workers workers with two children earning 67 per cent of average wage, international comparison, 2014

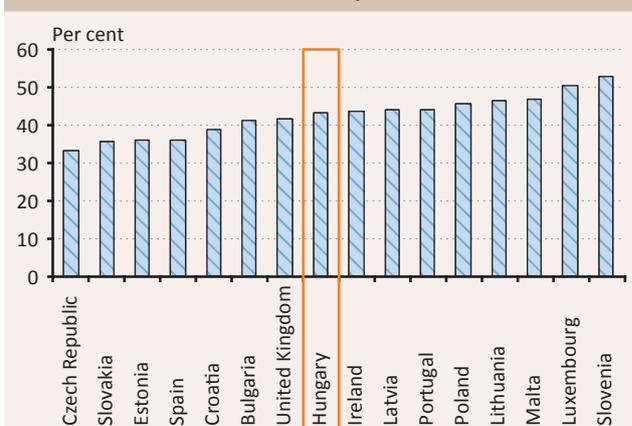


Note: \*Taking into account the Workplace Conservation Action Plan benefits, reported in 2015.  
Source: OECD

surplus income that can be obtained by employment is not sufficiently high compared to the size of social transfers. However, examining this from the labour demand side, a minimum wage that is set too high may also hamper the employment of the lower educated, as it raises the cost of employment.

**After the crisis, the number of discouraged unemployed increased in Hungary as well** (inactive persons who would like to work, but after a shorter or longer period of failed attempts give up looking

**Chart 2-72**  
Kaitz index in international comparison, 2014

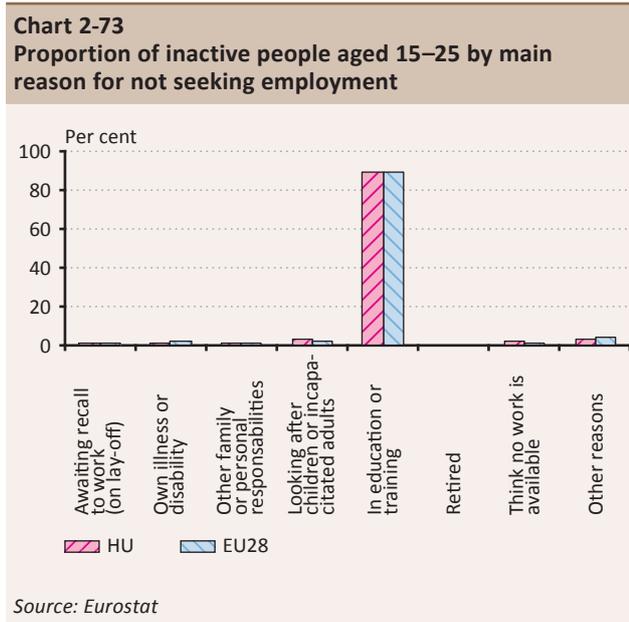


Source: Eurostat

for a job and leave the labour market, because they think that they cannot find a job anyway under the present labour market conditions). Most of them come from among the lower educated, as they are the ones who most often experience competition where they compete with better educated employees for jobs. Thus, this effect also contributes to their low participation rate.

### 2.4.2 FACTORS UNDERLYING THE LOW ACTIVITY OF THE YOUTH

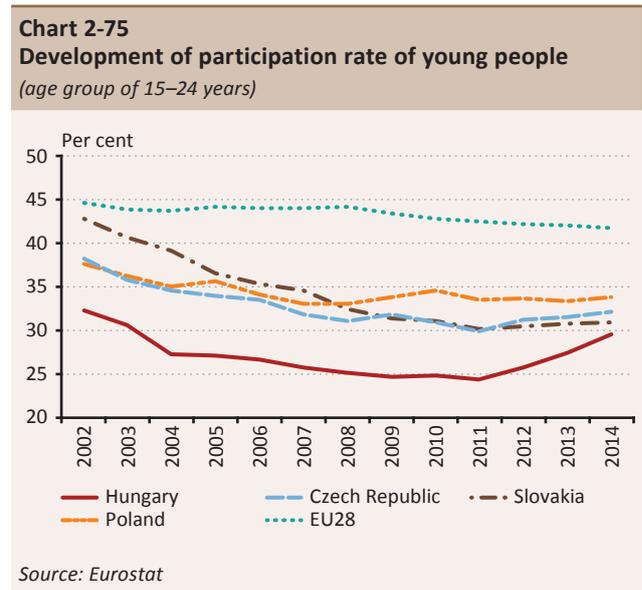
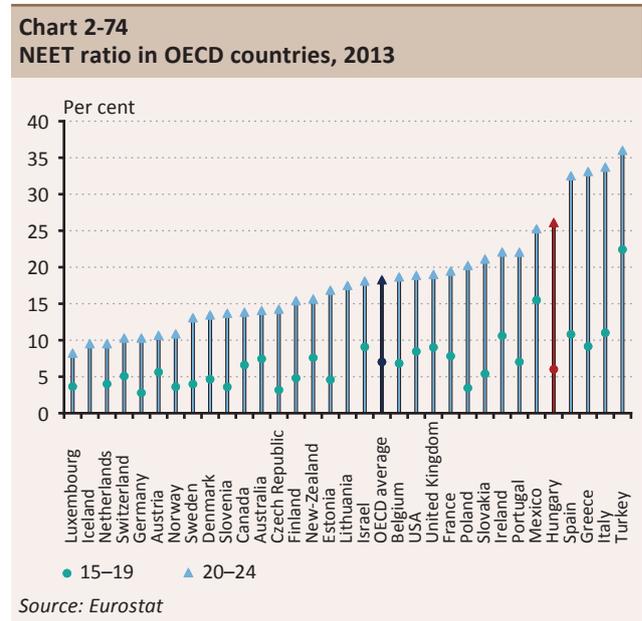
The respondents that specify participation in education as the reason for inactivity typically come from the group of the youngest working-age population; 88.6 per cent of the age group of 15-24 years specify studying as the obstacle to entering the labour market (Chart 2-73).



The inactive labour market status due to studying alone does not suggest negative processes; **the real problem is the ratio of working-age young people who do not study, but do not work either.** Presumably this group is one of the most sensitive to changes in educational and employment policy changes, and therefore it is worth focusing on these groups when elaborating measures, because their lag in terms of activity can be reduced in the short run.

The NEET ratio (Not in Education, Employment or Training) to capture the above-mentioned group, was

developed at the recommendation of international organisations; this is the ratio of young people in the age group of 15-24, who do not participate in education or employment (Chart 2-74). Based on the OECD data **in the age group of 20-24 years** – the most typical group of those participating in higher education – **Hungary is at the bottom of the ranking, well above the average of the OECD countries.** The weakest performing countries are those from the Mediterranean region, being well behind the other countries. By contrast, **in the younger, secondary school-age group, in Hungary the ratio of those 15-19 year-old young people who do not participate in any education or employment activity is better compared to the OECD average.**



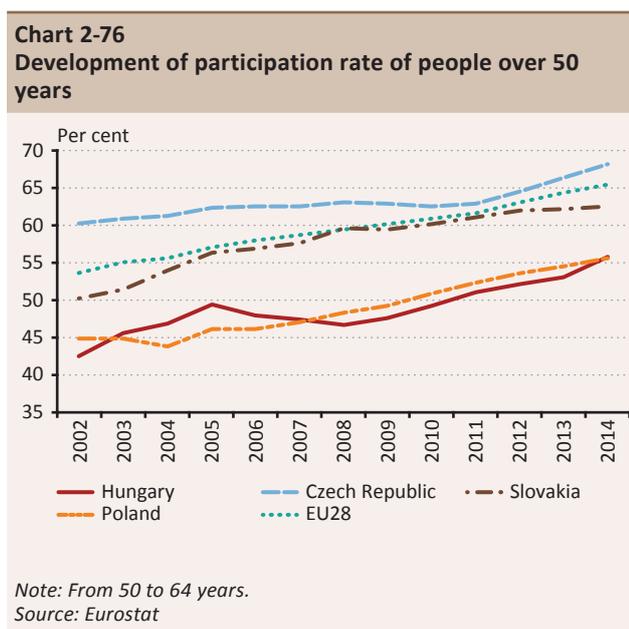
As regards the young, there has been a rising trend in the participation rate since 2011 in Hungary, while there is stagnation both in the European average and in the other Visegrád countries.

Examining the development of the participation rate of the youngest age group, it is apparent that whilst the ratio stabilised at the level of 2011 in the other Visegrád countries, in Hungary it shows a rising trend (Chart 2-75). This may be attributable, in addition to the demographic reasons, to the lowering of the compulsory school attendance age.

### 2.4.3 FACTORS UNDERLYING THE LOW PARTICIPATION RATE OF PERSONS OVER 50

In Hungary, the age group of over 50 years makes the highest contribution to the lag in the participation rate. One reason for this is that **in the pre-crisis years the effective retirement age was low due to the liberal regulation of early retirement.** As a result of the measures taken after the crisis, the effective retirement age started to rise, which will generate a gradual increase in the activity rate of this group.

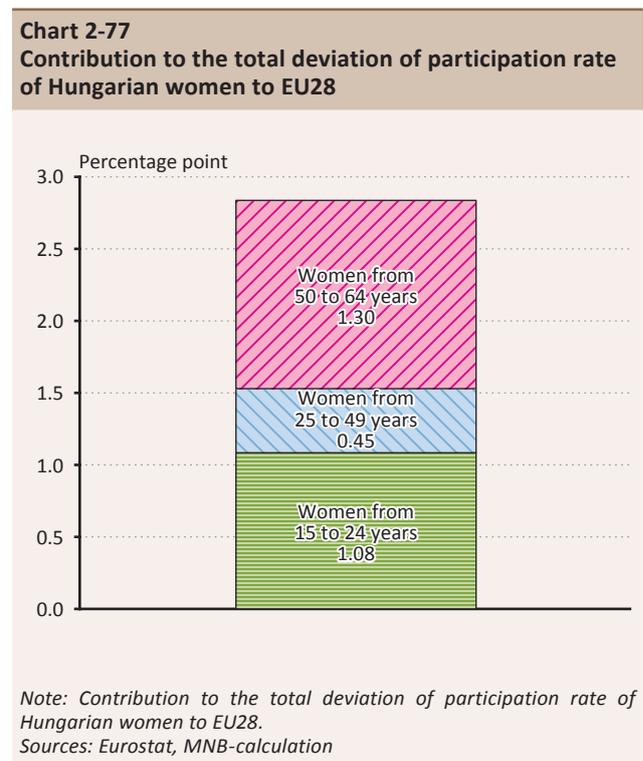
In addition to the pensionable age, the low activity ratio of the older age-group may also be attributable to the fact that **in Hungary the population's health-related quality of life attributes considerably deteriorate over the age of 50** (Kopp – Skrabski, 2009).



However, the development of the age group's participation rate in terms of time is similar to that of the European countries. Since 2008, there is a rising trend in the labour market participation rate of the elderly both in the Visegrád countries and in the EU28 (Chart 2-76). **The increasing participation rate may primarily be attributable to the increase in the pensionable age.**

### 2.4.4 FACTORS UNDERLYING THE LOW PARTICIPATION RATE OF WOMEN OF CHILD-BEARING AGE

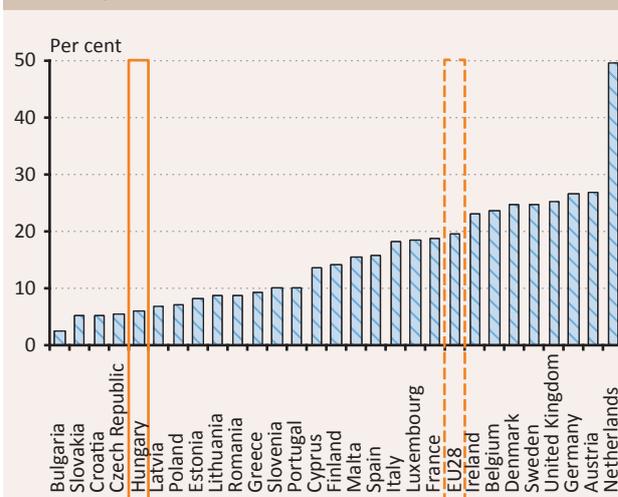
The participation rate of women of child-bearing age may be substantially influenced by the differences in the social benefits related to having children and in the social norms. In the case of women those of child-bearing age represent the most typical group of inactivity, albeit the over-50 age group also makes a significant contribution to the divergence from the European average (Chart 2-77). Children are traditionally taken care of by women, who are the ones to stay at home with the infant, which may be regarded as a kind of unpaid work. However, **in Hungary women stay at home with their children for several years on average**, which may be attributable to a number of factors.



On the one hand, the **public nursery school capacity does not satisfy the demands adequately**, and it is also not fully aligned with the requirements of working women (e.g. short opening hours). Private childcare services are not affordable for many or significantly increase the marginal cost of employment, which may also hamper the activity of women with children.

Moreover, in Hungary atypical forms of employment are less common, and the lack of part-time employment is also the reason for the low participation rate of women with small children. Although part-time employment increased significantly in Hungary after the crisis – with both cyclical and long-term factors contributing to this (for more details, see Bodnár, 2014) – the spread of part-time employment came to a halt in recent years. Accordingly, the ratio of part-time employed is still exceptionally low by European standards (Chart 2-78).

Chart 2-78  
Ratio of part-time workers in EU countries, 2014



Note: From 15 to 64 years.  
Sources: Eurostat,

## REFERENCES

BLEHA, B. – FÖLDHÁZI, E. – SPROCHA, B. – VANO, B. (2014): *Population projections for Hungary and Slovakia at national, regional and local levels*. Population projections developed within the project „SEEMIG Managing Migration and Its Effects – Transnational Actions Towards Evidence Based Strategies”.

<http://www.seemig.eu/downloads/outputs/SEEMIGPopulationProjectionsHUSK.pdf>

BÁLINT L. – KOVÁCS K. (2015): *Halandóság (Mortality)*. In Monostori, J. – Őri, P. – Spéder, Zs. (editor): *Demográfiai portré 2015 (Demographic Portrait 2015)*.

BLOOM, D. E. – CANNING, D. – SEVILLA, J. (2004): *The Effect of Health on Economic Growth: A Production Function Approach*. *World Development* Vol. 32, No. p.1, 1–13

HEALTH STRATEGIC RESEARCH INSTITUTE (2015): *Theasaurus for Health Sciences; Potential years of life lost*

[http://fogalomtar.eski.hu/index.php/Potenci%C3%A1lisan\\_elvesztett\\_%C3%A9let%C3%A9vek](http://fogalomtar.eski.hu/index.php/Potenci%C3%A1lisan_elvesztett_%C3%A9let%C3%A9vek)

WORLD HEALTH ORGANISATION (2015): *The determinants of health*.

<http://www.who.int/hia/evidence/doh/en/>

EUROPEAN COMMISSION (2013): *Investing in Health*. Commission Staff Working Document Social Investment Package February 2013.

EUROSTAT (2013): EUROPOP2013.

<http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database>

EUROSTAT (2015): *Tables by theme, Population and social conditions, Education and training, Education, Indicators on education finance, Private expenditure on education*.

<http://ec.europa.eu/eurostat/data/database>

FÖLDHÁZI E. (2015): *A népesség szerkezete és jövője (Structure and future of the population)*, in Monostori J. – Őri P. – Spéder Zs. (ed.): *Demográfiai portré 2015 (Demographic Portrait 2015)*.

HANUSHEK, E. A. – WÖSSMANN, L. (2007): *The Role of Education Quality in Economic Growth*. World Bank Policy Research Working Paper 4122.

HANUSHEK, E. A. – WÖSSMANN, L. (2010): *Education and Economic Growth*. In: Penelope Peterson, Eva Baker, Barry McGaw, (editors), *International Encyclopedia of Education*, Volume 2, pp. 245–252. Oxford: Elsevier.

- JACK, W. – LEWIS, M. (2009): *Health Investments and Economic Growth: Macroeconomic Evidence and Microeconomic Foundations* in Spence, M. – Lewis, M. (2009): *Health and Growth: Commission on Growth and Development*. The World Bank.
- JAYACHANDRAN, S. – LLERAS-MUNEY, A. (2008): *Life Expectancy and Human Capital Investments: Evidence from Maternal Mortality Declines*. NBER Working Paper No. 13947.
- KÁTAY G. – NOBILIS B. (2009): *Az aggregált aktivitást befolyásoló tényezők Magyarországon (Factors affecting the aggregate activity in Hungary)*. MNB Working Papers, 2009/5.
- KINCSES Á. (2015). *A nemzetközi migráció Magyarországon és a Kárpát-medence magyar migrációs hálózatai a 21. század elején*. (International migration in Hungary and the Hungarian migration networks of the Carpathian Basin in the beginning of the 21st century). Hungarian Central Statistical Office Working Papers(8)
- HUNGARIAN CENTRAL STATISTICAL OFFICE (2004): *Lifelong learning*. [http://www.ksh.hu/docs/hun/xftp/idoszaki/pdf/lifelong\\_learning.pdf](http://www.ksh.hu/docs/hun/xftp/idoszaki/pdf/lifelong_learning.pdf)
- HUNGARIAN CENTRAL STATISTICAL OFFICE (2012): *Hungary, 2011*. <http://www.ksh.hu/docs/hun/xftp/idoszaki/mo/mo2011.pdf>
- HUNGARIAN CENTRAL STATISTICAL OFFICE (2015): *Az oktatásra ható népesedési folyamatok (2004–2015) (Demographic processes impacting the education)*. [http://www.ksh.hu/thm/2/indi2\\_2\\_1.html](http://www.ksh.hu/thm/2/indi2_2_1.html)
- HUNGARIAN CENTRAL STATISTICAL OFFICE HUNGARIAN DEMOGRAPHIC RESEARCH INSTITUTE (2015): *Népesség-előreszámítás 2015 (Population forecast)*.
- HUNGARIAN CENTRAL STATISTICAL OFFICE (2010): *Társadalmi Helyzetkép, 2010 (Social survey)*
- KREISZ-HUDÁK E. – VARGA P. – VÁRPALOTAI V. (2015). *A demográfiai változások makrogazdasági hatásai Magyarországon európai uniós összehasonlításban (The macroeconomic impacts of demographic changes in Hungary in the context of the European Union)* *Financial and Economic Review*, Vol. 14 Issue 2., June 2015
- LACKÓ, M. (2010): *A rossz magyar egészségi állapot lehetséges magyarázó tényezői; összehasonlító makroelemzés magyar és osztrák adatok alapján, 1960-2004 (Potential explanatory factors of the poor state of health in Hungary; comparative macro analysis based on Hungarian and Austrian data, 1960-2004)* MTA Műhelytanulmányok 2010/07 (Hungarian Academy of Sciences Working Papers 2010 /07).
- LINDH, T. (1999): *Medium-term Forecast of Potential GDP and Inflation Using Age structure Information*. Submitted as working paper at Sveriges Riksbank. [http://www.riksbank.se/Upload/Dokument\\_riksbank/Kat\\_publicerat/WorkingPapers/WP\\_99.pdf](http://www.riksbank.se/Upload/Dokument_riksbank/Kat_publicerat/WorkingPapers/WP_99.pdf)
- MEREDITH, G. (1995): *Demographic Change and Household Saving in Japan*, in *Saving Behaviour and the Asset Price “Bubble” in Japan*, IMF Occasional Paper, No. 124.
- OECD (1998): *Education at a Glance: OECD Indicators*, OECD Publishing.
- OECD (2012): *Is increasing private expenditure, especially in tertiary education, associated with less public funding and less equitable access? OECD Education Indicators in Focus, 2012/08 (October)*. <http://www.oecd.org/education/skills-beyond-school/EDIFE8.pdf>
- OECD (2013): *How can countries best produce a highly-qualified young labour force? Education Indicators in Focus*. [http://www.oecd.org/edu/skills-beyond-school/EDIF%202013--N16%20\(eng\).pdf](http://www.oecd.org/edu/skills-beyond-school/EDIF%202013--N16%20(eng).pdf)
- OECD (2014): *Education at a Glance: OECD Indicators*, OECD Publishing.
- OECD (2015): *Potential years of life lost (indicator)*. doi: 10.1787/193a2829-en
- OECD (2015): *Public spending on education (indicator)*. <https://data.oecd.org/eduresource/public-spending-on-education.htm>
- Quintini, G. (2011): *Right for the Job: Over-Qualified or Under-Skilled? OECD Social, Employment and Migration Working Papers, No. 120*, OECD Publishing. <http://dx.doi.org/10.1787/5kg59fz3tkd-en>

UNITED NATIONS, DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS, POPULATION DIVISION (2015): *World Population Prospects: The 2015 Revision*.

WORLD BANK (2015): *Population Estimates and Projections, 1960–2050*.

<http://data.worldbank.org/data-catalog/population-projection-tables>

WEIL, D.N. (2007): *Accounting for the Effect of Health on Economic Growth*. The Quarterly Journal of Economics, August 2007, Vol.122(3), 1265–1306. o.

WILKIE, J. – YOUNG, A. (2009): *Why health matters for economic performance*. Department of the Treasury, Australia.

[http://archive.treasury.gov.au/documents/1496/PDF/05\\_Why\\_health\\_matters.pdf](http://archive.treasury.gov.au/documents/1496/PDF/05_Why_health_matters.pdf)

WORLD ECONOMIC FORUM (2015): *The Human Capital Report 2015*.

---

## 3 Productivity potential in the Hungarian economy

*The growth rate of productivity has been declining in the developed economies since the second half of the 2000s. In Hungary and the Central and Eastern European region, the process already started before the crisis, worsened as a result of the recession and grew slowly in the subsequent years.*

*Of the processes determining Hungarian productivity, positive developments started to take shape in the area of employment. In the last three years, the number of people in employment has continuously increased in annual terms.*

*Another measure of employment, the average number of hours worked per week, has decreased since EU accession in most countries of the CEE region, and thus in Hungary as well. Although since 2013 the negative trend appears to be faltering in this indicator as well, it is changing much more slowly than the number of people in employment.*

*With improving employment statistics, per capita productivity returned to the pre-crisis level in 2011-2012 after the decline in 2009 and has been increasing ever since. The return to the pre-crisis level was still one of the slowest in a regional comparison. Productivity per working hour has been stagnating since 2009 and did not surpass its pre-crisis level before 2014. The increase in labour productivity measured in working hours is the slowest in Hungary among the Visegrád countries: the labour productivity of the other countries has been above the pre-crisis levels since 2012.*

*Similarly to labour productivity, total factor productivity was also impacted negatively by the crisis and this only started to grow again in the last two years. Examining manufacturing companies, it can be established that the role of individual productivity increase (TFP) is the most significant; companies achieved relatively smaller growth with the more efficient utilisation of the resources within the company, such as investment or hiring. The reallocation between the companies made a major contribution to the aggregate productivity increase after 2009. The reallocation took place primarily among the manufacturing industries rather than within specific industries.*

**Productivity is a long-term determinant of economic growth.** Productivity expresses the efficiency of the allocation of production factors in the output generating process. This chapter examines the productivity of the Hungarian economy and Hungarian companies, comparing them with the processes in the Visegrád countries (Czech Republic, Poland, Romania and Slovakia). We examine the changes in the factors

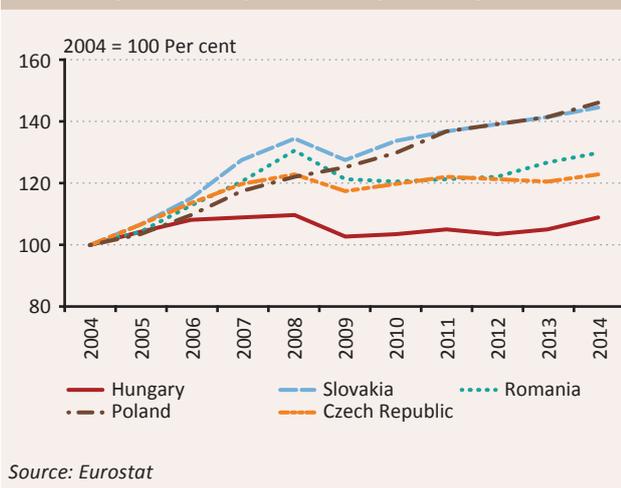
that determine productivity, the development of employment, value added and investments in the context of the countries and the key macroeconomic sectors. We also touch upon the issue how the resource allocation between the industries and the companies impacts growth in productivity. Moreover, we briefly discuss how productivity can be measured and what kinds of problems arise in relation with estimation.

## 3.1 Development of productivity and the components thereof since the crisis

### 3.1.1 DEVELOPMENT OF GDP

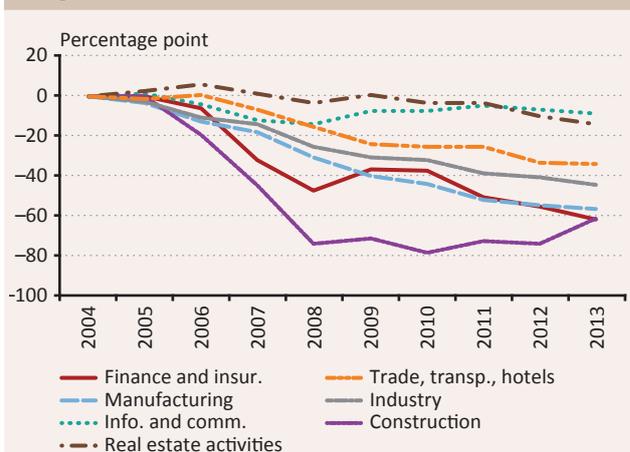
The growth of the Hungarian economy has lagged behind growth in the other Visegrád countries since 2005 (Chart 3-1). When comparing the sum of Hungary's gross domestic product with the GDP growth of the neighbouring countries, it is clear that the Hungarian gross domestic product was relatively high before the crisis, but economic growth was slower in the 2000s compared to the region, and only by 2014 did growth recover to the pre-crisis level of 2008, while it still lagged behind regional leaders by more than twenty percent. The recovery rate is similar to that of the Romanian economy; however, it lags behind the growth of the Czech, Slovakian or Polish economies, where the pre-crisis level was reached by 2010, at the latest.

**Chart 3-1**  
Real GDP growth compared to neighbouring countries



The deceleration of Hungarian GDP growth compared to the Visegrád countries can be seen in several sectors. The largest difference is in the construction industry, where the Visegrád countries recorded 75-percentage point higher GDP growth on average since 2004. A smaller, but still substantial lag can also be identified in manufacturing, as well as in retail and wholesale trade, which make a major contribution to

**Chart 3-2**  
Sectoral GDP growth compared to the average for the Visegrád countries since 2004

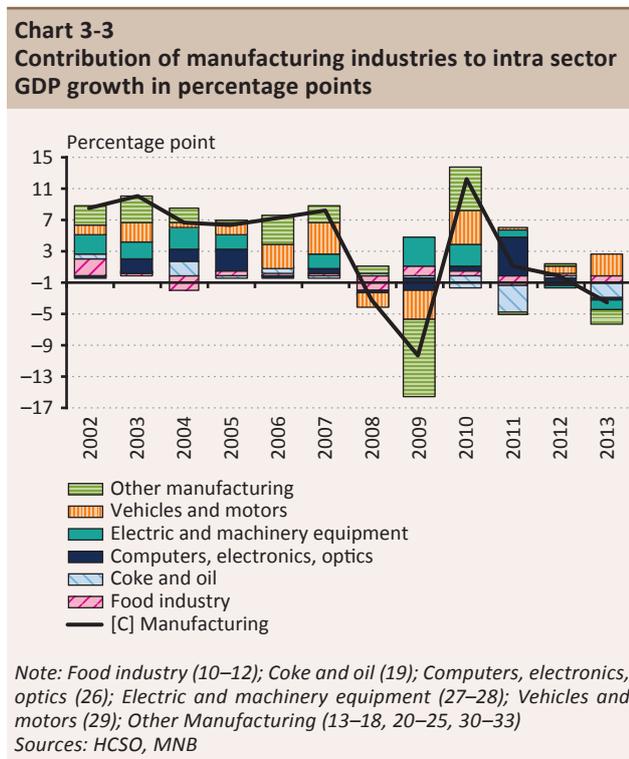


Source: Eurostat

overall GDP growth. There is also a significant shortfall in the growth of financial services (Chart 3-2).

In relation to the comparison of GDP with the neighbouring countries, it should be noted that there were significant differences (both in the output level and economic structure) during the economic transition period, which is also identifiable in the dynamics of convergence. The countries that implemented the reforms later (e.g. Romania) realised part of the productivity growth arising from the structural transformation of the economy in the second half of the 2000s, while these processes in Hungary were particularly important in the second half of the 1990s. Hence, in the following we attempt to identify the structural reasons for the deceleration of the Hungarian economy, relying on the HCSO's detailed output side GDP statistics, broken down by sectors, as well as corporate balance sheet reports; these documents are available only up to 2013. The advantage of using corporate data is that they help identify the shocks that hit the individual companies or industries, which often have a tangible impact on the macroeconomic developments as well (Gabaix, 2011).

**The deceleration of manufacturing is attributable to almost all industries.** Chart 3-3 shows the contribution of the individual industries to the total GDP growth of the manufacturing sector. It is worth mentioning that – albeit the weighting of manufacturing in the national economy has hardly changed since 2000 – the structure thereof has changed considerably. By 2013 the automotive industry and the production of machinery had become the two key sectors of manufacturing at the expense of the textile, clothing and food industries. **An important consequence of the structural transformation within manufacturing is the change in Hungary’s exports structure.** (See more details on this topic in the Box).

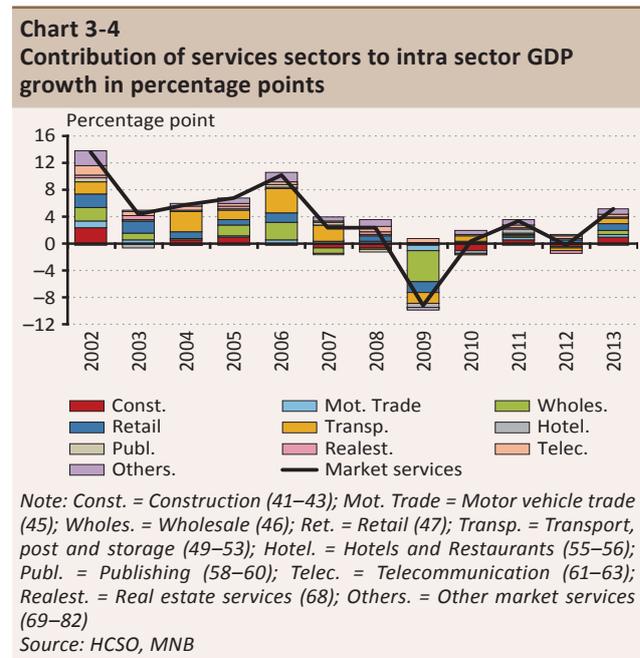


**Two sectors are key factors in the deceleration of the manufacturing sector after the crisis.** On the one hand, since 2009 the contribution of the **crude oil sector** has been continuously and considerably negative. Here, factors playing an important role mainly included the high concentration of the sector, the price shocks impacting the individual companies and the global economic process, as well as the reallocation within the value chains connecting to the sector, for example outsourcing and reform of the trading activity.

Another important industry that contribute to the slower growth was the **electronics** industry. Despite the positive contribution in 2011, the sector’s growth contribution has significantly decreased compared to past years. In this sector, the shutdown of Nokia’s plant in Komárom and the relapse impacting several important actors (e.g. Samsung, Bosch, NI Hungary) play an important role.

In the electronics and machinery sector, key companies were transformed, hence these two sectors are analysed here together. Although between 2009 and 2011 they made a major positive contribution to growth, in 2012 and 2013 their growth contribution was moderate.

**The automotive industry has played an outstanding role in manufacturing growth since 2011.** Growth was seen both at vehicle manufacturers and companies manufacturing automotive parts. In addition to Audi’s major growth contribution and the launch of manufacturing at Mercedes, by 2013 both Opel and Suzuki had also significantly expanded their production.<sup>73</sup> Based on the balance sheet data related to 2014 the performance of the key companies improved further. Audi, Mercedes and Opel increased their business profit by 4.6, 1.4 and 25.2 per cent, respectively. It was only Magyar Suzuki that closed its financial year with a result that fell short of 2013.<sup>74</sup>



<sup>73</sup> Opel Szentgotthárd Magyarország opened the Flex motor factory in 2012 and commenced series production in February 2012 (Source: Opel.hu). The Suzuki plant in Esztergom started the series production of the SX4 models in 2013 (Source: Suzuki.hu).

<sup>74</sup> Source: <http://e-beszamolo.im.gov.hu/>

**Based on the growth decomposition, the slow growth in market services is primarily attributable to processes in the wholesale and retail sector.**

There is no such industry in that is curbing GDP growth continuously and to a great degree; instead deceleration is affecting almost all sectors. On the other hand, due to the modest demand persisting since the crisis the income generation contribution of both the wholesale and retail trade, as well as of transportation, is smaller than between 2002 and 2007.

More particularly, the decrease in GDP in 2009 is primarily attributable to the downturn in wholesale trading determined by individual corporate shocks (Chart 3-4). The dynamics may have reflected the global or domestic intra-group optimisation of the sector's largest companies<sup>75</sup> better than the processes of the sector's actual earnings potential.

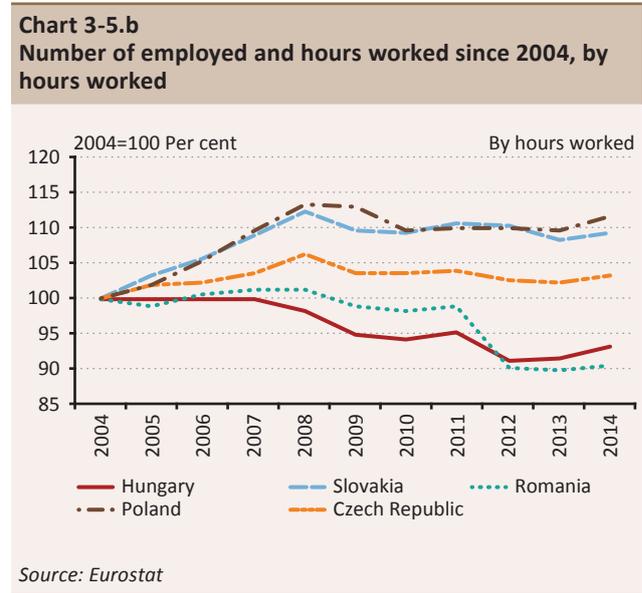
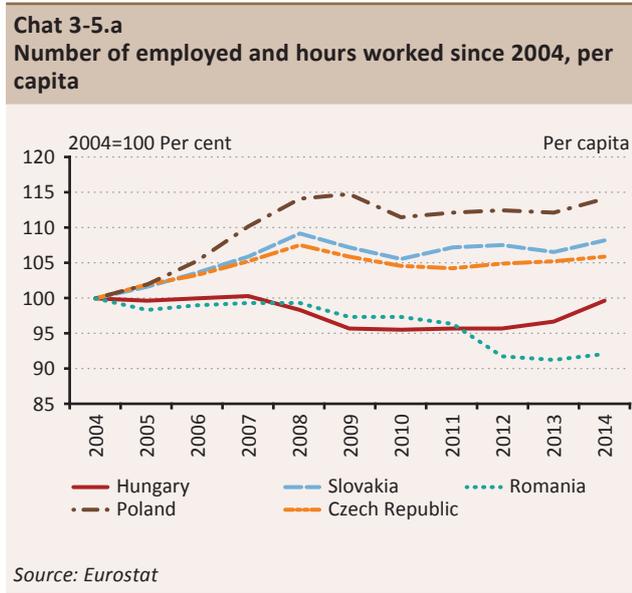
### 3.1.2 EMPLOYMENT TRENDS

As a result of the crisis, Hungarian employment fell by roughly 5 per cent compared to 2004, but in the last three years it has posted a continuous growth on an annual basis. With the exception of Romania and

Hungary, employment returned to nearly pre-crisis levels in all economies.

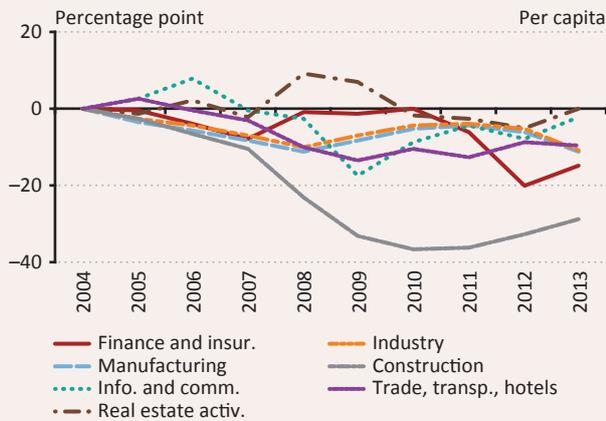
In contrast to employment, the average number of hours worked per week has decreased since EU accession in most of the countries, and thus in Hungary as well. The frequency of part-time employment increased in Hungary as a result of the crisis, which may partially be due to the changes in the labour market institutional system (the new Labour Code). Thus, the volume of hours worked increased at a slower rate than employment and reached the pre-crisis level (Charts 3-5.a and 3-5.b).

**The slower growth of Hungarian employment compared to the Visegrád countries can be observed in several sectors.** Charts 3-6.a and 3-6.b summarise the sectoral processes. Similarly to GDP, in a regional comparison, the largest deceleration in growth can be observed in construction, although the lag compared to the region has gradually decreased in recent years. On the other hand, employment growth is slower in retail and wholesale trade, manufacturing and in financial services compared to the other countries of the region. The only sector that posted employment growth measured in working hours that is more dynamic than in the rest of region is real estate transactions.



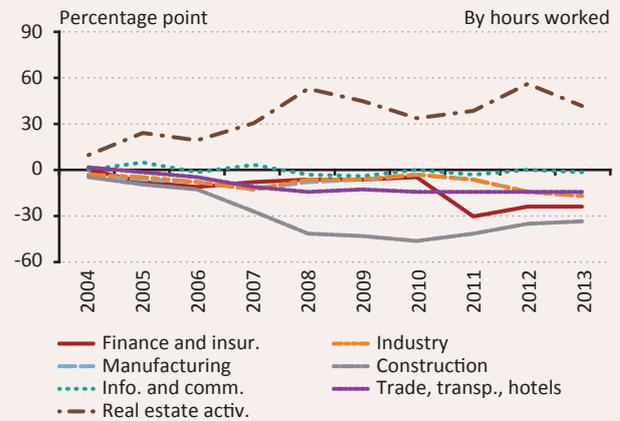
<sup>75</sup> Amongst others MVM Földgáz Trade Zrt, Fibria Trading International Kft, Glencore Grain. Source: [Hvg.hu/top500](http://Hvg.hu/top500)

**Chart 3-6.a**  
Sectoral employment growth compared to the average of the Visegrád countries since 2004, per capita



Source: Eurostat

**Chart 3-6.b**  
Sectoral employment growth compared to the average of the Visegrád countries since 2004, by hours worked



Source: Eurostat

### 3-1. Box

#### Indicators used to measure productivity

Productivity can be captured by a variety of indicators depending on the respect in which the production process is examined. The most commonly used measure is labour productivity, which measures output per working hour or employee. Its advantage is that the quantitative measurement of labour as a factor of production is evident, while output per working hour does not capture the contribution of other factors to output, the efficiency of the allocation of production factors, the technological components or the labour intensity (Mark, 1986).

Several problems of measuring productivity are known, some of which are highlighted here. Firstly, it is important to measure the individual factors in an accurate and comparable manner. A good example of this is the comparison of the capital value of machine pools from investments waves implemented in different years among the enterprises (OECD, 2009). Secondly, as the production factors reflect either an annual average (e.g. headcount) or a year-end status (capital stock), the efficiency increase of the enterprise (under fixed factors) and the investment implemented as a result of the productivity shock cannot be separated from each other. A solution for the problem is offered by, amongst others, Olley and Pakes (1996), Levinsohn and Petrin (2003), and recently also by Wooldridge (2009).

The total factor productivity (TFP) may also be used for the more comprehensive measurement of productivity, which may remedy the aforementioned shortcomings.<sup>76</sup> Thus, the efficiency and degree of capital absorption compared to labour may be taken into account.

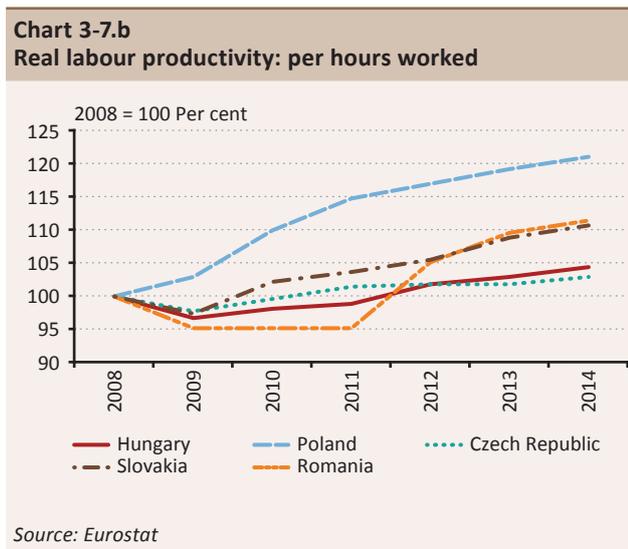
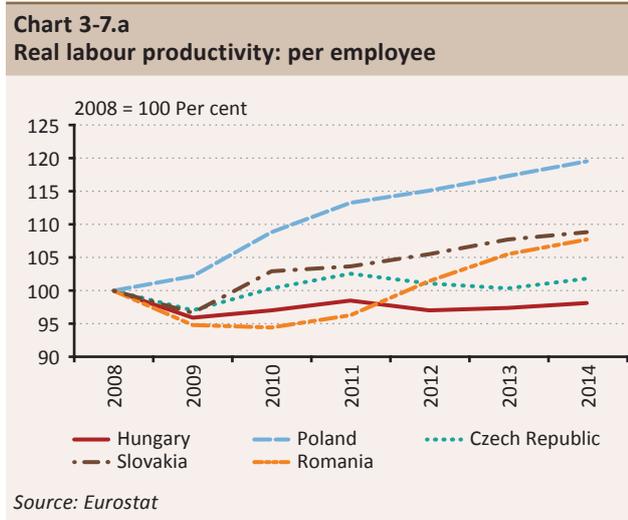
The total factor productivity approaches assume the existence of an identical production function within a narrow industry. That is, it assumes, for example, that the small and large enterprises use very similar or identical production technology, which is not necessarily true. This same argument may be also valid in the context of the domestic and foreign-owned enterprises.

It is worth mentioning that during the calculation of the change in labour productivity and in TFP the real value added is compared in time within the company. The comparison becomes the more difficult, the higher the number and the more specialised products and services a company sells, as it is more difficult to separate the price change from the value change. For example, in this context it is easier to compare two concrete cement plants (Syverson 2004) than two IT service companies.

<sup>76</sup> TFP – Total Factor Productivity or MFP – Multi Factor Productivity

### 3.1.3 LABOUR PRODUCTIVITY TRENDS

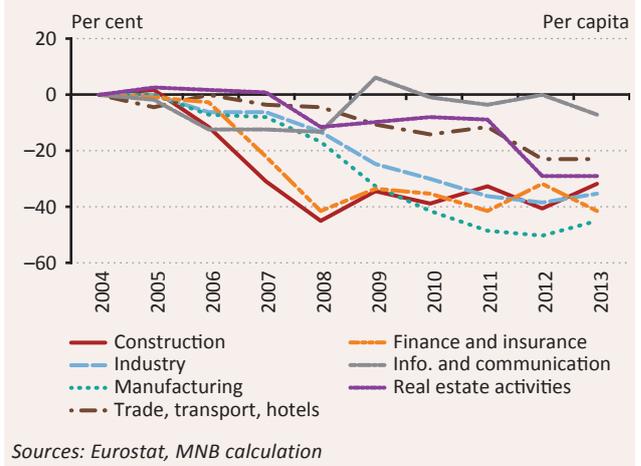
Per capita productivity returned to the pre-crisis level in 2011–2012 after the decline in 2009, and it has been increasing ever since. **Hungary was one of the slowest to return to the pre-crisis level.** Productivity per working hour has been stagnating since 2009 and did not reach its pre-crisis level before 2014. **The increase in labour productivity is the slowest in Hungary among the Visegrád countries,** while the labour productivity of the other countries has been above the pre-crisis levels since 2012 (Charts 3-7.a and 3-7.b).



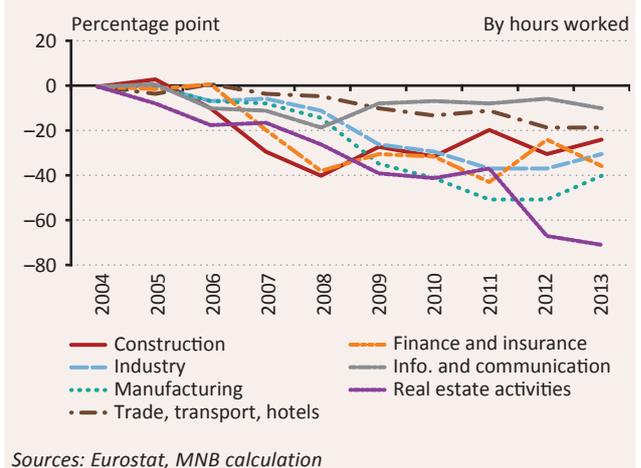
At the sector level, the development of the Hungarian labour productivity can be also compared to the average performance of the region (Charts 3-8.a and 3-8.b). **Productivity per capita shows the largest lag compared to the regional growth in financial services, construction and manufacturing.** This lag

can also be identified in productivity per working hour. The smallest deceleration in productivity can be observed in the information, communication, trade and transportation sectors. Per capita and per working hour productivity differ considerably in the real estate sector, which is primarily attributable to the higher number of working hours due to the real estate market recovery after the crisis.

**Chart 3-8.a**  
Sectoral productivity growth compared to the average of the Visegrád countries since 2004, per capita



**Chart 3-8.b**  
Sectoral productivity growth compared to the average of the Visegrád countries since 2004, by hours worked

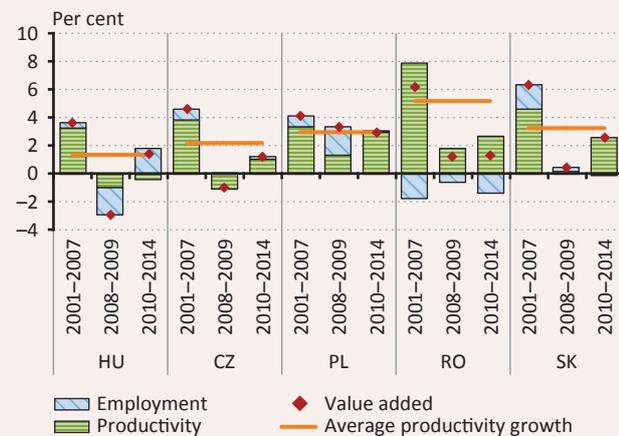


The Polish economy was not shaken by the crisis in terms of labour productivity; in Romania (as later becomes clear from the sectoral and micro-level decomposition) productivity has considerably increased due to the info-communication (ICT) sector and to the expansion of ICT-intensive sectors. In the case of Hungary and the Czech Republic, the

expansion of productivity continuously falls short of the EU average, but the deceleration is not so strong as in the case of the Romanian economy.

**In the period between 2010 and 2014, average productivity growth significantly decreased in the region, and more particularly Hungary posted a negative average.** Additionally, in the early 2010s, a further decline was observed in productivity, although with an outstanding increase in labour, compared to the regional countries (Chart 3-9). The value added decreased along a similar trend in the countries of the region, with the exception of Poland and Romania: in the former, a quick rebound in productivity was observed, whilst in the latter employment already decreased in the period 2001–2007 and this process continued after the crisis as well. In the case of the Czech Republic and Slovakia, there was no employment growth, while in Hungary and Poland the employment growth rate was positive.

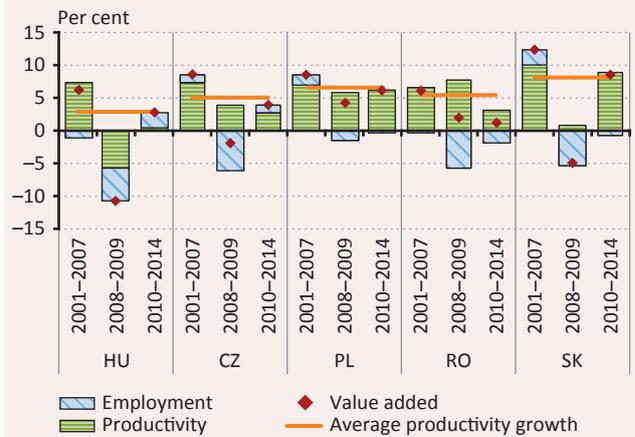
**Chart 3-9**  
Decomposition of aggregate value added growth in the national economy: regional comparison



Sources: Eurostat, MNB calculations

In the case of manufacturing, there was a moderate decrease in productivity growth as the regional average, and the negative contribution of employment significantly reduced the sector's value added. **Hungarian manufacturing productivity continued to increase in the period of 2010–2014.** The picture is distinctive at the level of the individual countries as in the case of the aggregate decomposition. The productivity decline is somewhat smaller; in the case of Romania the trend reversal suggests structural reform in the sector, as production must have become less labour-intensive (Chart 3-10).

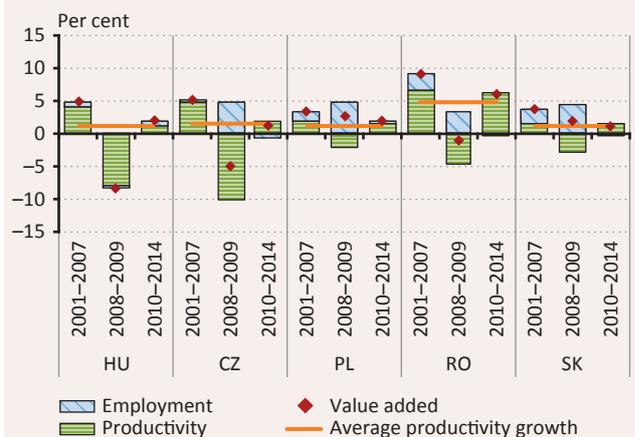
**Chart 3-10**  
Decomposition of value added growth in manufacturing: regional comparison



Source: Eurostat, MNB calculations

In Hungary, productivity growth in market services posted a stronger decline than in the manufacturing sector in 2008–2009, but remained positive. With the exception of the Czech Republic, Hungary and Romania, the sector remained positive even after the crisis in the context of total value added growth. On the other hand, the growth rate in the market services sector decreased significantly (except in Poland). It is apparent that in most of the economies productivity growth has declined drastically compared to the pre-crisis period (Chart 3-11).

**Chart 3-11**  
Decomposition of value added growth in market services: regional comparison



Source: Eurostat, MNB calculations

### 3.1.4 TOTAL FACTOR PRODUCTIVITY

Total factor productivity (TFP) shows how many times the output of a company exceeds or falls short of the other company's output in the same sector with the use of the same volume of capital and labour. Similarly to labour productivity, **TFP was also impacted negatively by the crisis** and the growth thereof only restarted in the last two years. When assessing the production process, total factor productivity also considers the capital in addition to labour.

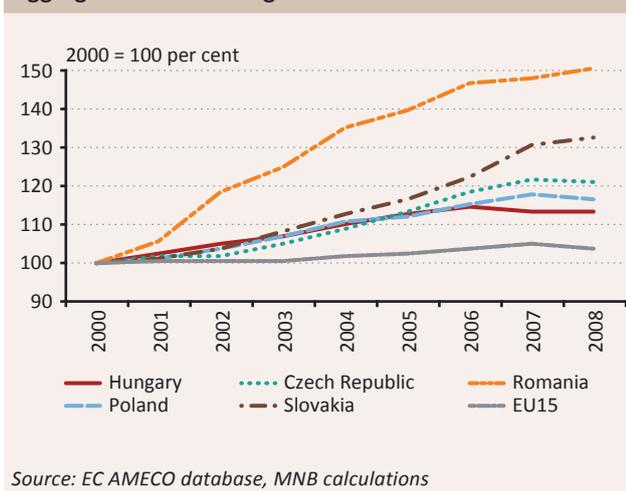
**In the 2000s, there was a considerable convergence to the fifteen most advanced member states of the European Union, based on the aggregate TFP growth rates of the regional economies.** Romania was clearly the vanguard of the region: by 2008 its productivity was one and a half times higher than in 2000. Apart from the Romanian economy, Slovakia also performed well, albeit for most of the period the Visegrád countries achieved a similar development. **In the case of Hungary, the Czech Republic and Poland, productivity growth was already characterised by deceleration and stagnation in the pre-crisis years.** Productivity in Poland increased considerably in the post-crisis period; and from the regional countries, Slovakia's productivity also exceeded the EU15. After the

crisis the fastest growth in productivity was seen in the Romanian and Slovakian economies (Chart 3-12.a and 3-12.b).

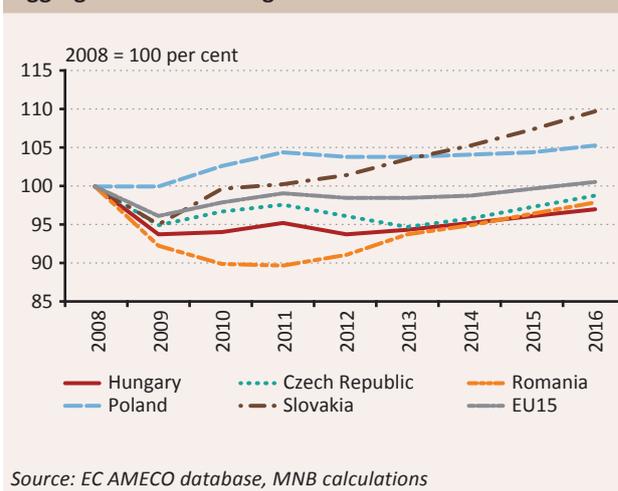
In the following, we examine the development of TFP in the context of companies, focusing on the manufacturing sector. With the help of corporate financial statements the GDP growth of manufacturing can be broken down to individual total factor productivity change and value added growth linked to the change of capital and labour force. The detailed description of the methodology is included in the study of Kátay and Wolf (2008).<sup>77</sup>

The efficiency of the conversion of production factors (capital and labour) into a product and the productive development thereof has a strong influence on the economic growth.<sup>78</sup> **In the period 2002–2007, GDP growth in the manufacturing sector was determined in each year primarily by the increase in total factor productivity at the individual level** (Chart 3-13). This is well illustrated by the decomposition of the growth of the gross product produced by the manufacturing sector. Apart from individual productivity growth, the growth via hiring is also significant. Although the growth via investment is essentially positive in almost every year, its impact is less than that of labour (Chart 3-14).<sup>79</sup>

**Chart 3-12.a**  
Aggregate TFP in the region



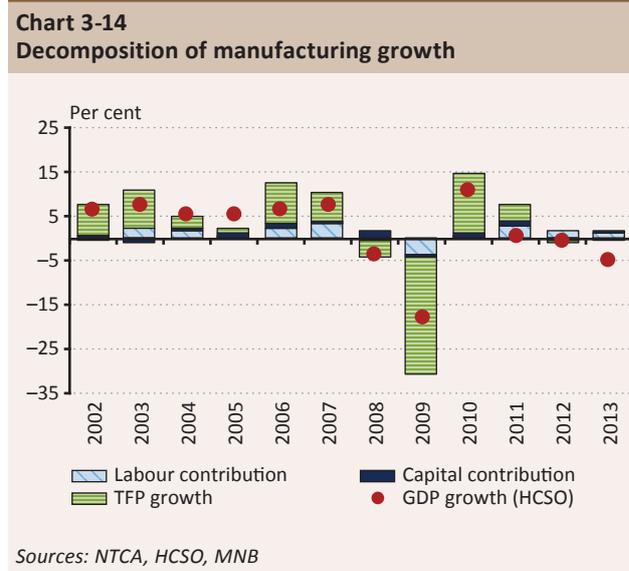
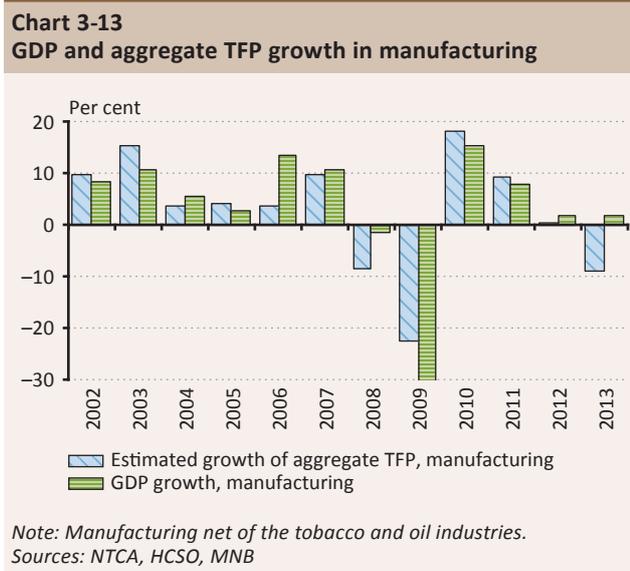
**Chart 3-12.b**  
Aggregate TFP in the region



<sup>77</sup> For the decomposition we use the production function-based estimation procedure of Levinsohn and Petrin (2003). The analysis ignores the tobacco and oil industries, as due to the change in the accounting rules introduced in 2001 the corporate value added must not be recognised directly.

<sup>78</sup> The problems of measuring corporate productivity and the empirical literature related to the topic is summarised best by Syverson (2008).

<sup>79</sup> It is important to note that here the investment is calculated from the corporate level tangible asset change, which may differ from the whole-economy fixed investment, due to, for example, the secondary market of machinery and real estate.



On average for the period 2008–2013, GDP growth is primarily determined by the capital and – to almost the same degree – by the increase in labour force. The fixed investments in the automotive industry and metal processing implemented after 2010 play

a key role in the positive impact of the capital and employment growth.<sup>80</sup> The GDP of manufacturing increased on average by 0.5 percentage point in the period of 2008–2013 both by capital and employment growth.

<sup>80</sup> The productivity decline of the metal processing industry is attributable to the decrease in output levels, which impacts most companies of the sector.

## 3.2 Causes of the deceleration

The slowdown in economic growth had already started in most countries before the crisis. Hungary was no exception in this regard. However, **recovery from the crisis was also slower than in the case of the previous recessions**. This chapter deals with the potential causes of the deceleration and the slow recovery.

### 3.2.1 INVESTMENTS

One cause of the slowdown in productivity and growth may be that **the growth rate of investments also declined and – in contrast to the recoveries from the previous recessions – remained at a low level**. However, it should be noted that the decline in investments is also attributable to demand side and balance sheet adjustment reasons (Martonosi, 2013). In Hungary, after many years of declining and the 2006 austerity measures, capital intensity is at the pre-crisis level. In the countries of the region – except in Poland – the volume of investments significantly decreased after the crisis (Chart 3-15a.). There are different reasons behind the falling investment rates. On the one hand, investment rate of the private sector is lower, even in a regional comparison, on the other hand, the balance sheet adjustment which took place in the household and corporate sector, and additionally the macroeconomic uncertainties and debt reduction by the corporate sector, restrained the pace of economic recovery. Furthermore, supply side credit burdens hampered SME sector investment (Chart 3-15b.). In 2013, a turnaround occurred in the regionally rather low investment activity, thanks to government investments between 2011 and 2015 accounting for up to two per cent of GDP growth, which is largely explained by intensified use of EU funding.

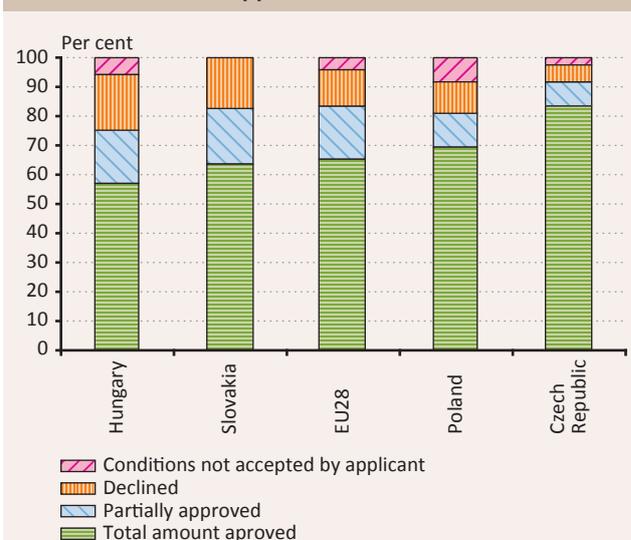
The uncertainties in the global real economy and the higher country risks that followed the crisis may have also played a major role in the decline in investments. Many economists believe that foreign direct investments (FDI) play an important role in productivity and economic growth (Rivera-Batiz,

1991). The uncertain economic environment may significantly lower the inflow of new foreign direct investments into the economy, and in certain cases it may even lead to disinvestment, which was observed throughout the region in the post-crisis years.

**Chart 3-15.a**  
Regional decomposition of GDP proportionate investment rates



**Chart 3-15.b**  
Results of SME loan applications in 2014



### 3.2.2 HUMAN CAPITAL

As this report explains in Chapter 1, human capital expansion is one of the most important pillars of long-term growth. **In addition to the deceleration of direct investments, growth in human capital also started to stagnate** both in the developed OECD countries and in the CEE region. For example, in Great Britain the stagnation may have been caused by the declining level of education; as a result of the under-skilled labour supply the companies' strategy is shifted toward the less knowledge- and technology-intensive activities, which jeopardises the economic growth and the improvement of the living standards in the long run (Sisson, 2014). Based on the data of the Penn World Table 8.1 and the study of Barro, Lee from 2012 the mean years of schooling of the population over the age of 15 significantly increased in the 1990s (in the case of Hungary by more than 18 per cent).

### 3.2.3 INNOVATION PROCESSES

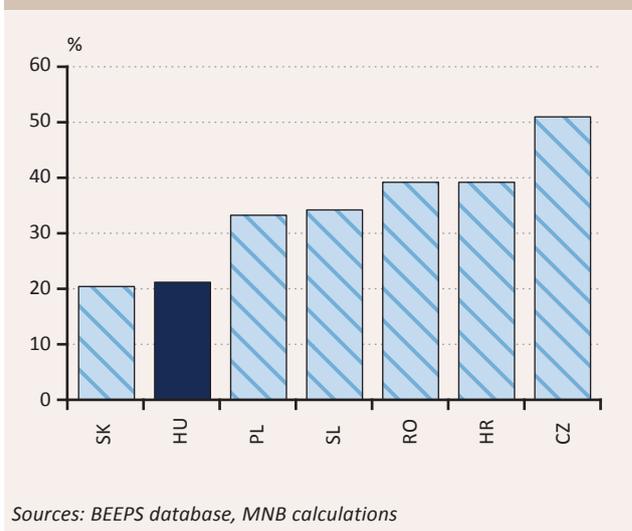
Innovation is an important growth driver and is also essential to lay the foundation for future growth. The typical measure of innovation activity is resources used for research and development (R&D); however, the concentration of R&D activity between firms is also an important factor, besides the total amount spent. We approach the analysis of Hungary's innovation processes from two aspects and compare them to the countries in the region. Firstly, we examine the **frequency of innovation activity**. Secondly, we compare Hungary's GDP-proportionate R&D spending with the figures of the region to get a view of the degree of investment in innovation.

To answer the first question, the questionnaire-based database of EBRD–BEEPS<sup>81</sup> can be used, which focuses on companies in the Central and Eastern European countries. The fifth wave of the survey (2011–2014) already contains questions related to innovations, which ask about product, process, organisational and marketing innovations. The BEEPS survey primarily focuses on the representative sampling of the manufacturing sector's management activity. In the Visegrád region, they survey on average 380 companies per country. We try to obtain an overview of Hungarian companies' innovation position by comparing the answers of the Hungarian sample

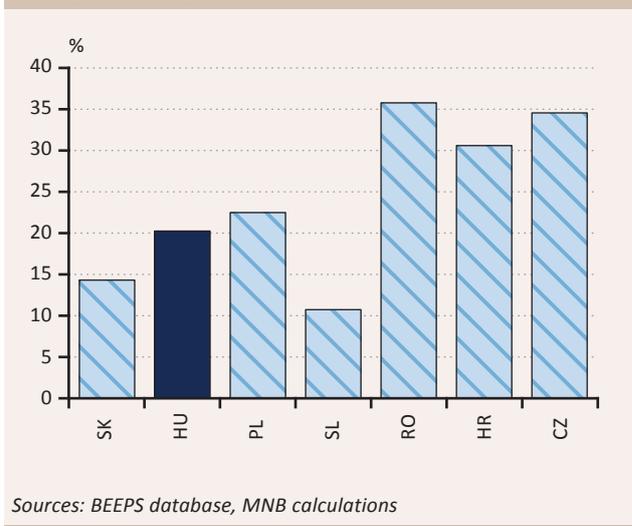
with the answers provided by the companies from neighbouring countries.

Of the four questions examining the activity of the last three years, the first one related to product innovation, i.e. introduction of new technology or use of new material (Chart 3-16.a). In Hungary, a barely more than one-fifth of respondents introduced a new product. Compared to the rest of the Eastern European countries, this is one of the lowest rates, particularly compared to the responses of Czech and Romanian companies.

**Chart 3-16.a**  
Innovations in the past three years (2011–2014) – share of respondents (product innovation)



**Chart 3-16.b**  
Innovations in the past three years (2011–2014) – share of respondents (product/sales innovation)



<sup>81</sup> Business Environment and Enterprise Performance Survey (BEEPS).

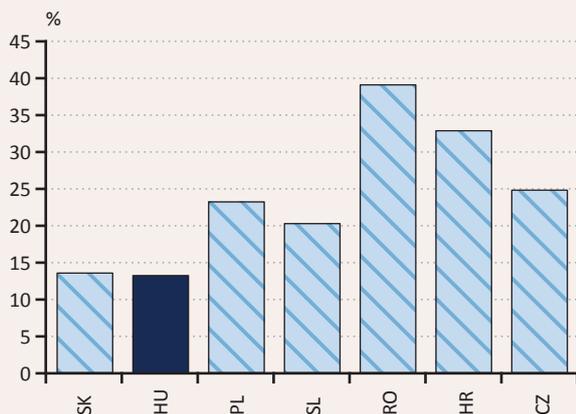
The second question asks about the use of a new production system and/or new sales channel (Chart 3-16.b). In Hungary merely a little below one-fifth of the respondents introduced a new production system, more than 70 per cent of which is product innovator.

The third question relates to organisational innovation and the development of a new organisational-management structure, or reorganisation (Chart 3-16.c). This impacted 13 per cent of the Hungarian respondents, albeit eight per cent of them are product innovators, and reorganisation is usually not typical for product innovators. Compared to the other Eastern European countries the ratio of Hungarian innovators belongs to the lowest ones in this innovation-related question as well. In the fourth question, related to marketing innovation, the Hungarian companies also

show a similarly low activity. Merely 19 per cent of them introduced new marketing strategy (Chart 3-16.d).

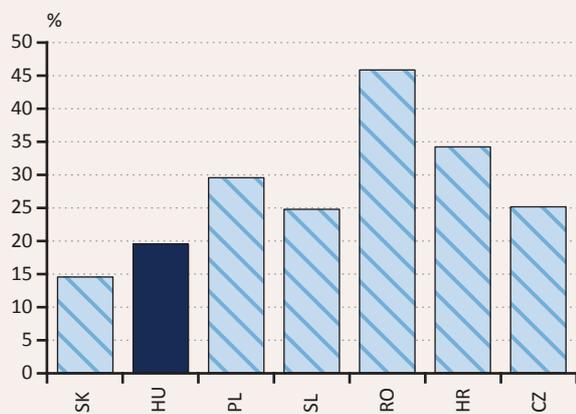
The innovation activity rate, which is low in a regional comparison, does not mean that the R&D expenditure is low as a per cent of GDP (Chart 3-17).

**Chart 3-16.c**  
Innovations in the past three years (2011–2014) – share of respondents (organisational innovation)



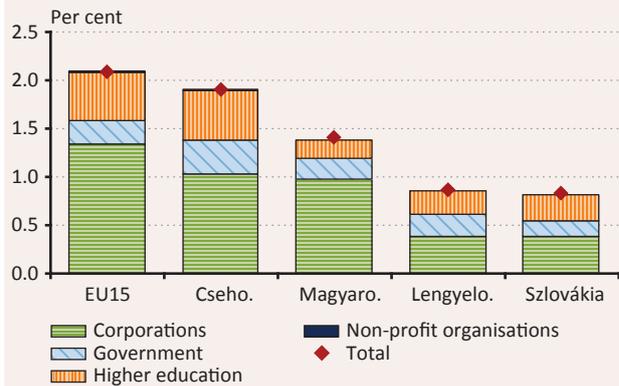
Sources: BEEPS database, MNB calculations

**Chart 3-16.d**  
Innovations in the past three years (2011-2014) – share of respondents (marketing innovation)



Sources: BEEPS database, MNB calculations

**Chart 3-17**  
R&D expenses to GDP, by sector



Source: Eurostat

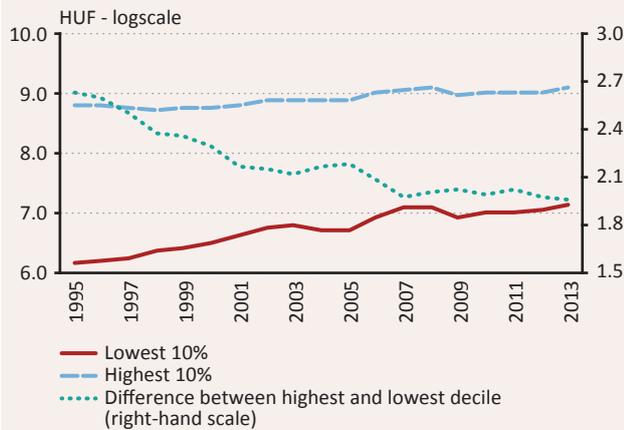
**Hungary already spent almost 0.5 per cent of GDP on R&D before the crisis, and this ratio has been continuously increasing since 2008.** In a regional comparison, this ratio is the second best after the Czech economy. It may follow from the innovation activity rate and the relation of the GDP-proportionate R&D spending that the Hungarian innovation is performed by a relatively few companies of high value. **Thus, the R&D activity in Hungary is highly concentrated.**

### 3.2.4 REALLOCATION PROCESSES

During reallocation, the distribution of production factors and market share among the companies changes. Its potential degree depends considerably on the distribution of productivity between the companies: the productivity growth achievable within the sector and by the resource reallocation among them is inherent in the heterogeneity of productivity.

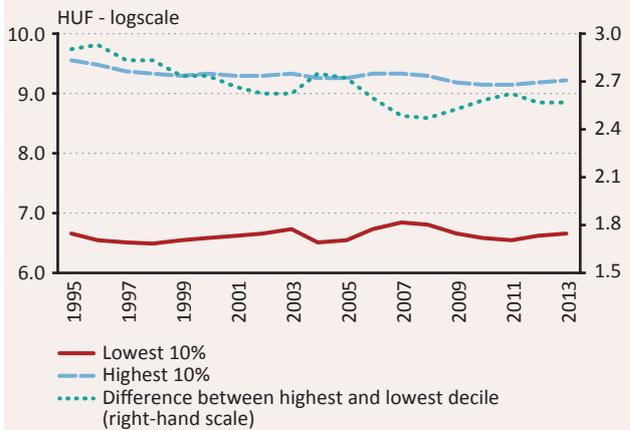
Both labour productivity and TFP show a significant variance even in a narrowly defined industry. In the case of Hungarian manufacturing companies, employing at least 5 persons, there is a seven-fold output difference on average between the companies in the lowest and highest productivity decile, calculating with the same volume of output. A similarly persistent heterogeneity, albeit of different

**Chart 3-18.a**  
Difference in labour productivity of the highest and lowest deciles of Hungarian firms, manufacturing



Sources: NTCA, MNB calculations

**Chart 3-18.b**  
Difference in labour productivity of the highest and lowest deciles of Hungarian firms, market services



Sources: NTCA, MNB calculations

degree, exists in the industries of other countries.<sup>82</sup> For example, in the USA this difference is two-fold on average.<sup>83</sup>

Based on the labour productivity of the least and most productive companies and the difference between them, it is apparent that in Hungary the heterogeneity in terms of productivity decreases between the companies over time (Charts 3-18.a and 3-18.b).

The process has two underlying impacts: the least productive companies achieve relatively higher productivity growth, and there is an average productivity growth due to the elimination of the worst companies. Based on the positive impact, the reallocation appears

to be stronger in manufacturing than among the market service companies (Chart 3-18.a). **On the other hand, the formerly strong reallocation appears to decelerate after 2007 in both sectors.**

Static allocative efficiency is calculated in two ways: The first approach (Chart 3-19) permits the examination of the distribution among the sectors: the correlation between the weight of the sector in value added and the sector's labour productivity is examined. **In Hungary** the index of the static reallocation increases, which means that **the more efficient sectors make an increasing contribution to GDP.** Although the result is in line with the results calculated from the enterprise data: we found positive

**Box 3-2**

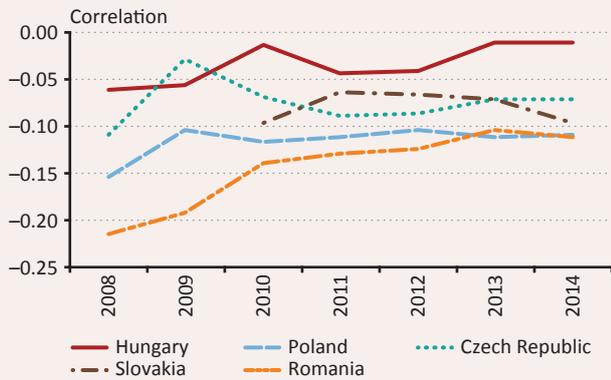
**Examination methods of reallocation processes**

In the absence of an international database, the regional reallocation processes can be examined by sector and enterprise size categories, focusing on the static allocative efficiency. We examine the static allocative efficiency relying on the methodology of Olley and Pakes (1996).<sup>87</sup> The method examines the correlation between productivity and market share or employment compared to a random – usually even – distribution. For example to what degree it is true that the more productive sectors have higher market share. This can be best expressed by a correlation. The correlation does not necessarily express a distance from a desirable status, since the even distribution – compared to which the strength of the correlation is measured – is not necessarily good, as identical market share is assumed among the sectors. Hence, we focus primarily on the change in the correlation. The correlation increasing towards the positive values expresses that the more productive companies and sectors can obtain an increasing market share.

<sup>82</sup> Lopez-Garcia (2015).

<sup>83</sup> Syverson (2011).

**Chart 3-19**  
Static reallocation across sectors of the economy



Sources: Eurostat

reallocation impacts in both cases in 2010-2011. It should be noted that here we examine the entire market sphere and manufacturing is treated as one sector. In a regional comparison it is clear that a similar process takes place in Romania and Poland as well.

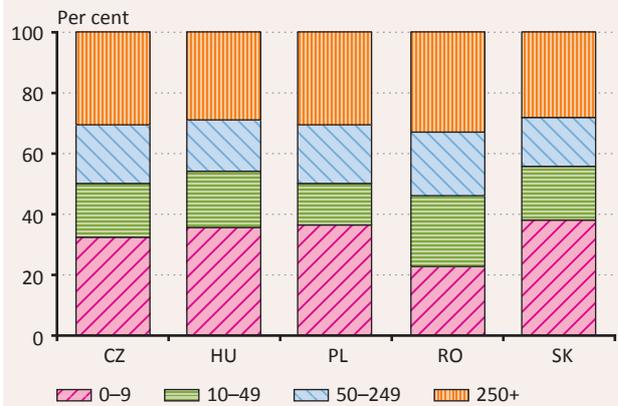
Another approach to static allocative efficiency is the analysis of reallocation within the sector. **The intra-sectoral reallocation by enterprise size is one of the most dynamic growth stimulating processes.** This is also highlighted by a recently published OECD (2014)<sup>84</sup> study, according to which the most dynamic growth is generated by the small, but mostly start-up companies, aged between 0 and 2 years.

In the following, we examine the correlation within the sector between the productivity of various enterprise size categories and the weight of the size category's value added in the sector. The enterprise size categories differentiate micro, small, medium and large enterprises.<sup>85</sup>

According to Eurostat data, almost 70 per cent of all employees in Hungary are employed by micro, small and medium-size companies. This ratio is similar in other Central and Eastern European countries as well (Chart 3-20.a).<sup>86</sup> Of the examined countries, only Romania shows a structural difference in the ratio of the number of employees employed by micro and small companies relative to each other.

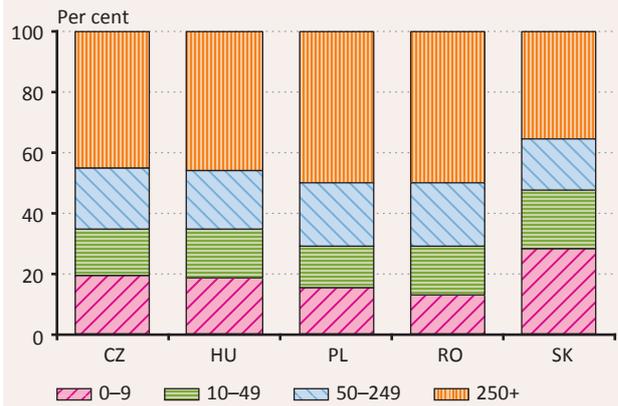
Based on the percentage ratio of GDP produced by the corporate sector, the Hungarian structure – similarly

**Chart 3-20.a**  
Employment decomposed by firm size, 2012, non-financial firms



Note: All sections (B-J,L-N)  
Source: Eurostat

**Chart 3-20.b**  
GDP decomposed by firm size, 2012, non-financial firms



Note: All sections (B-J,L-N)  
Source: Eurostat

to employment – does not differ significantly from the same statistics of the regional countries (Chart 3-20.b). The structural distribution – i.e. a little more than half of GDP is produced by large enterprises – resembles the Czech and Polish economies the most. Of the examined countries, only Slovakia shows a structural difference as the GDP produced by large enterprises there is only about 35 per cent and the micro companies have the highest weight in production.

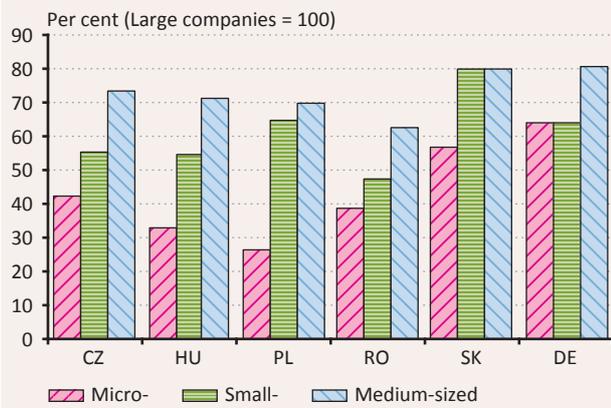
Based on the employment and GDP distribution pattern, it is not obvious that the structural distribution would justify Hungary's lower growth compared to the countries of the region.

<sup>84</sup> Criscuolo et al. (2014).

<sup>85</sup> Here we use the employee number categories of 0–9, 10–49, 50–249 and over 250 persons definition.

<sup>86</sup> Without agrárgazdaságot és a közösségi szolgáltatásokat.

**Chart 3-21**  
Average labour productivity of enterprises compared to large enterprises, 2010–2014 average



Source: Eurostat

Apart from the similar value added and employment distribution there are also differences between the countries in the degree of the productivity of the companies of different size compared to each other. It is clear from the chart that the productivity of the micro and small companies considerably lags behind that of the large enterprises in all countries (Chart 3-21).

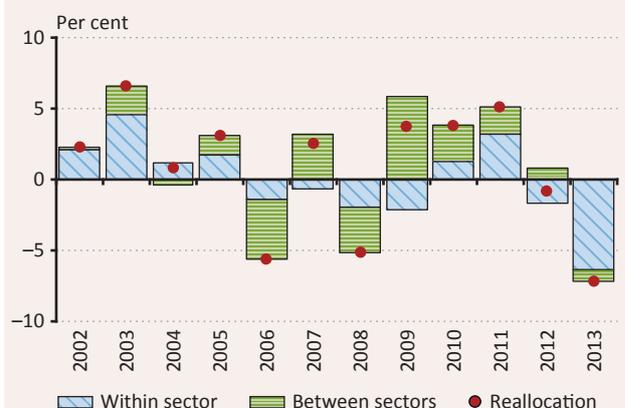
The productivity of micro enterprises in Hungary on average for 2010–2014 is roughly one-quarter of that of Hungarian large enterprises, which is the second largest relative difference after Poland among the countries of the region. The productivity of Hungarian small and medium-sized enterprises is 55-70 per cent of that of the large enterprises, which is a difference that may be compared with the regional average.

Analysis of the **processes** of the static allocative efficiency **within the sector is possible by** examining four sectors of the countries in the region based on the correlation between the productivity of the sector’s enterprise size categories and its weight in value added (Chart 3-19a).

**The static efficiency allocation in the Hungarian manufacturing sector shows a high value,** which is not reduced by the crisis either. In a regional comparison: the high efficiency is also typical for the other countries under review; the impact of the crisis in this sector does not affect the allocative efficiency or impacts it only to a small degree.

The reallocation within manufacturing can be examined in more detail based on the Hungarian

**Chart 3-22**  
Decomposition of manufacturing productivity reallocation



Sources: NTCA, HCSO, MNB calculations

enterprise data, focusing on the total factor productivity.

The manufacturing sector’s aggregate TFP growth can be divided into two parts: the weighted amount of individual efficiency growth and the reallocation following from the change in the individual enterprises’ participation in production and in their weight. Chart 3-22 compares the efficiency-increasing reallocation within the sector (by the 2-digit TEAOR code within the manufacturing sector) – when the employees and the capital flow from less productive to productive enterprises – with the reallocation among the sectors.

**In the period ending with the crisis, the intra-sector reallocation plays a more important role.** More particularly, the food industry (especially in 2001–2003) and the manufacturing of electronic equipment (2003–2005) made an outstanding contribution. In terms of degree, the reallocation between the sectors has a relatively less important role in the period of 2002–2007.

**In the post-crisis period (2008–2013), within the reallocation the movement among the industries becomes more significant on average, particularly in the first half of the period.** The reallocation is primarily attributable to the transformation in the electronics and machinery industries,<sup>87</sup> while the automotive and food industries (in 2008–2009) are also characterised by productivity attributable to positive reallocation. In the intra-sector reallocation, 2013 shows a negative value; this is primarily due to the transformation of the food industry.

<sup>87</sup> On important transformation in 2009 was that GE Zrt was transformed into a limited liability company.

## 3.3 Conclusions

It can be concluded that the economies of Hungary and other countries of the region are characterised by duality regarding productivity and that the productivity difference between small and large firms is relatively greater than in the developed members of the European Union. In the wake of the economic crisis, the reallocation processes slowed down, and the convergence of the productivity difference between the least and the most productive companies has been sluggish. This phenomenon is explained by a combination of factors. On the one hand, the productivity expansion linked to the economic transformation phase following the fall of communism

ended by the mid 2000s in the Hungarian economy. On the other hand, certain elements of the business environment may impede the efficient reallocation of resources in the process. Although new business start-ups in Hungary are relatively simple, the regulatory environment makes it difficult to start the operation, in addition the relatively slow liquidation practice the prevailing “zombie companies” hamper the process of productivity expansion and the cleaning of the firm portfolio. The previously shown financing constraints further inhibit the growth of businesses, as well as reducing the rate of aggregate fixed investments to GDP.

### Box 3-3

#### Transformation of export structure

The economic crisis and the recovery processes, as well as the reallocation among the enterprises and the sectors, also have an effect on the export structure.

The link between economic growth and export concentration is important in several respects. On the one hand, concentrated exports raises the risk that economic processes related to a single sector or depending on a single buyers’ market may strengthen and the eventual negative shocks may impact the entire economy. On the other hand, the increase in export diversification may indicate that an increasing number of companies or an increasing number of multiproduct companies are able to enter the global market, which may suggest an increase in productivity.<sup>88</sup>

#### Goods exports

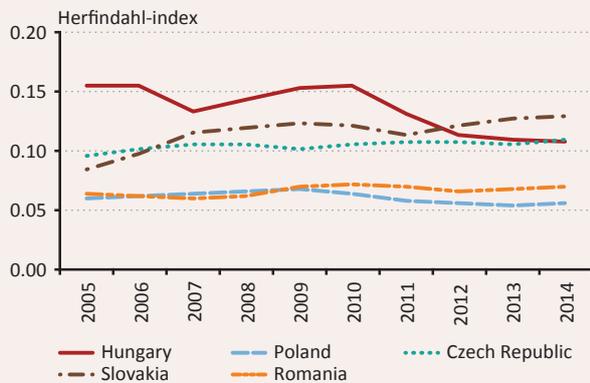
In a regional comparison, the concentration of Hungarian goods exports is among the highest. This is reflected in Chart 3-23.a, which shows the concentration of the export value by products,<sup>89</sup> expressed by the Herfindahl index. Apart from the slightly increasing export concentration of Slovakia, the concentration ratio of the other countries in the region has been relatively stable since 2005. By contrast, the concentration of the Hungarian goods exports has decreased significantly since 2010. This decrease is attributable to two opposite underlying processes (Chart 3-24). The share of machinery and electronic equipment in export value decreased significantly after 2010. More particularly, it is primarily the contraction of the export ratio for two technical articles that are the key factors: the ratio of telephones and their accessories (HS8517) and the monitors and projectors (HS8528). In parallel with this, the ratio of the value of automotive exports has significantly increased in exports, which is in line with the

<sup>87</sup> The Olley Pakes decomposition is used, amongst other, in the recently issued thematic publication of the European Commission (2013) examining business dynamics.

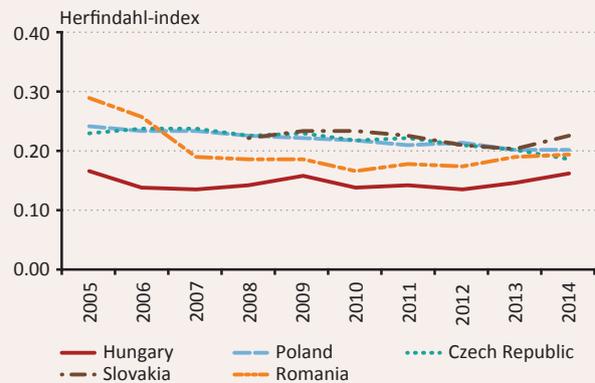
<sup>88</sup> For more details, see Cadot et al. (2013).

<sup>89</sup> For the calculation of the concentration, we used the 2-digit Harmonised System nomenclature.

**Chart 3-23.a**  
Concentration of exports in goods



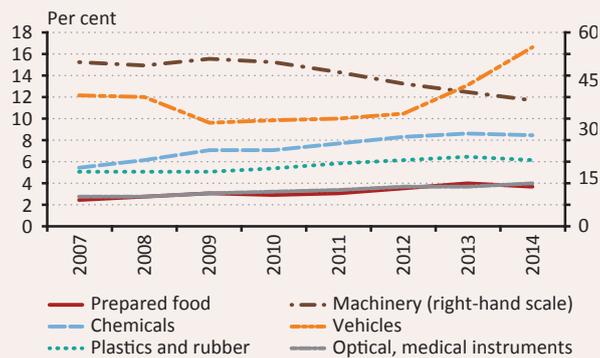
**Chart 3-23.b**  
Concentration of exports in services, by product groups



Note: Herfindahl index is calculated over HS2 product categories and UNCTAD service groups.

Sources: NTCA, HCSO, MNB calculations, Comext, UNCTAD

**Chart 3-24**  
Share of most important product groups in the value of exports: 2007–2014



Note: Herfindahl index is calculated over HS2 product categories and UNCTAD service groups.  
Sources: Comext database, HS 2007, roman num. categories

higher automotive industry investment and productivity that commenced after 2009. However, it should be noted that after the ousting of the electronic products over time the chemical and plastic industry products are gaining increasing importance.

Hungarian services exports are the least concentrated in the region, with no material change in its degree since 2005.

### Services exports

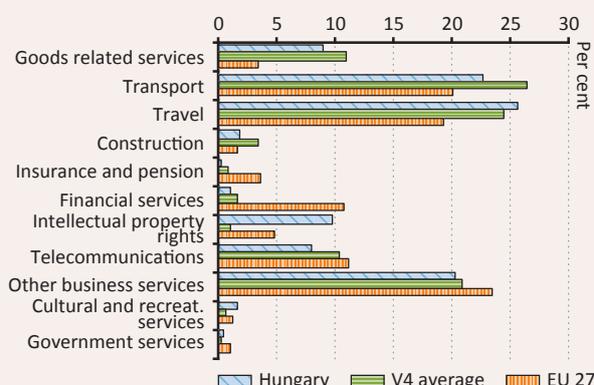
Services exports accounts for an increasing part of global external trade. In Hungary these exports account for almost one-fifth of total exports, similar to the neighbouring countries. This ratio (10 per cent) is the lowest in the Visegrád countries, while it is the highest in Romania (22 per cent) on the average of the period of 2006–2014.

Contrary to goods exports, the value of services exports did not decline to the same degree as goods exports as a result of the crisis. While the latter decreased by roughly 21 per cent from 2008 to 2009, services exports fell only by 5 per cent.

However, there are significant differences compared to the EU-27 average services exports structure. The services export linked to manufactured goods represents on average a much smaller weight in the EU-27 countries, while in these countries the emphasis is rather on the export of financial and other business services.

Foreign trade companies stand out among the rest of the enterprises in several respects. They are larger, more capital intensive, demonstrate higher productivity and pay considerably higher wages than the non-foreign trade companies. Export sales are much more concentrated than domestic sales, i.e. the gross exported value is controlled by a few companies. For examples, see the studies of Mayer and Ottaviano (2008) or Békés (2011).

**Chart 3-25**  
Distribution of the value of exported services over service categories, 2010–2014 average



Note: V4 = Czech Republic, Slovakia, Poland, Romania  
Source: UNCTAD

Services exporters stand out even from the exporters. They are the best and largest companies. Table 3-1 shows how many times the exporter enterprises are bigger and more productive compared to the non-exporters. While the goods-only and the services-only exporters employ almost four and seven times, respectively, as many employees as non-exporters, the companies that export both goods and services employ thirty times as many persons. There is a similar ranking also in labour productivity and TFP.

**Table 3-1**  
Employment and productivity of exporting firms relative to non-exporter firms

	How many times bigger is		
	Employment	Labor Productivity	TFP
Product exporter	3,7	1,9	1,7
Service exporter	7	4,4	3,6
Product & Service exporter	29,1	4,8	9

Source: Rariga, J. (2015)

Services exports is a considerably concentrated activity. In the two sectors that provide the highest number of exporters – that is in manufacturing and trade – merely 13 per cent of the exporter companies sell services abroad. The share in exports of the largest services exporters (for example the 10 or 20 largest companies) is twice as high as that of goods exporters.

The descriptive statistics show that although services exports play an important and increasing role in Hungary’s global competitiveness, only the largest and best Hungarian enterprises participate in this activity. The productivity requirements for a service provider to become an exporter and be competitive in the international markets are even more stringent than in the case of goods.

## REFERENCES

- Bétry, E. – Chich, M. – Ennouchy, P. – Faure, M.E. – Gaudy, L. (2015): *The United Kingdom's productivity puzzle*, Trésor economics, No. 146.
- Békés G. – Muraközy B. – Harasztosi P. (2011): *Firms and products in international trade: Evidence from Hungary*, Economic Systems, Elsevier, vol. 35(1), p. 4–24.
- Cadot, O. – Carrère, C. – Strauss-Kahn, V. (2013): *Trade Diversification, Income, And Growth: What Do We Know?* Journal of Economic Surveys, Wiley Blackwell, vol. 27(4), pp. 790–812, 09.
- Criscuolo, C. – N. Gal, P. – Menon, C. (2014): *The Dynamics of Employment Growth New Evidence from 18 Countries*, OECD Science, Technology and Industry Policy Papers No. 14
- European Commission (EC) (2013): *Product Market Review 2013: Financing the real economy*, European economy 8/2013.
- Gabaix, X. (2011): *The Granular Origins of Aggregate Fluctuations*, Econometrica, Econometric Society, vol. 79(3), pp. 733–772, 05.
- Kátay, G. – Wolf, Z. (2008): *Driving Factors of Growth in Hungary – a Decomposition Exercise*, MNB Working Papers 2008/6, Magyar Nemzeti Bank.
- Levinsohn, J. – Petrin, A. (2003): *Estimating Production Functions Using Inputs to Control for Unobservables*, Review of Economic Studies, Wiley Blackwell, vol. 70(2), pp. 317–341, 04.
- Lopez-Garcia, P. – COMPNET team (2014): *Micro-based evidence of EU competitiveness: the CompNet database* Working Paper Series 1634, European Central Bank.
- Mayer, T. – Ottaviano, G. (2008): *The Happy Few: The Internationalisation of European Firms*, Intereconomics: Review of European Economic Policy, Springer, vol. 43(3), pp. 135–148
- Mark, A.J. (1986): *Problems encountered in measuring single- and multifactor productivity*, Monthly Labor Review, December, 1986.
- Martonosi Á. (2013): *Tényezők az alacsony hazai beruházás hátterében*, MNB-Szemle, 2013. január
- OECD (2009): *Measuring Capital*, OECD Manual, second edition
- OECD (2015): *The Future of Productivity*, OECD books. ECO/CPE/WP1(2015)6  
<http://www.oecd.org/eco/growth/OECD-2015-The-future-of-productivity-book.pdf>
- Olley, G.S. – Pakes, A. (1996): *The Dynamics of Productivity in the Telecommunications Equipment Industry*, Econometrica, Econometric Society, vol. 64(6), pp. 1263–1297
- Pessoa, J. – van Reenen, J. (2014): *The great British jobs and productivity mystery*, Voxeu, June
- Rariga, J. (2015): *Szolgáltatásexport Magyarországon*, MNB-kézirat
- Rivera-Batiz, F. – Rivera-Batiz, L. (1991): *The Effects of Direct Foreign Investment in the Presence of Increasing Returns Due to Specialization*, Journal of Development Economics, November 1991, 34(1-2), pp. 287–307.
- Sisson, K. (2014): *The UK Productivity Puzzle – is employment relations the missing piece?* Acas Policy Discussion papers, September 2014
- Syverson, C. (2004): *Market Structure and Productivity: A Concrete Example*, Journal of Political Economy, University of Chicago Press, vol. 112(6), pp. 1181–1222., December.
- Syverson, C. (2011): *What Determines Productivity?* Journal of Economic Literature, American Economic Association, vol. 49(2), pp. 326–65, June.
- Uppenberg, K. (2011): *Economic growth in the US and the EU a sectoral decomposition*, EIB Papers, Vol. 16, No1, 2011 pp. 18–52.
- Wooldridge, J.M. (2009): *On estimating firm-level production functions using proxy variables to control for unobservables*, Economics Letters, Elsevier, vol. 104(3), pp. 112–114.

# 4 Condition of Hungarian Economic Development in the light of alternative development and competitiveness Indicators

*The generally accepted measure of economic development, that is the gross domestic product and analogous indicators, focus only on the narrower dimensions of development and wealth, i.e. on the historic economic performance. They do not show, among others, the non-financial and subjective aspects of wealth, and also disregards the issues of income distribution and sustainability. In addition, the gross domestic product says little about the future growth potential and the drivers of an economy.*

*Based on alternative complex indicators, which also consider social and environmental aspects, in a global comparison, Hungary shows higher state of development than suggested by the per capita gross domestic product or its position in rankings that focus on economic competitiveness. In terms of quality of the environment, the knowledge-based economy and income inequalities, Hungary belongs to the top 20 per cent of the countries. The indicators examining state of development in a broader sense – particularly the indices containing the education dimension and examining life expectancy at birth – also reflect that in the case of Hungary the social inequalities mostly appear in the access to public services and healthy conditions of life.*

*The multi-dimensional competitiveness rankings show a mixed picture of Hungary. The indicators (WEF, IMD), most of which are based on corporate manager surveys, rank Hungary lower than its actual economic state of development measured by the GDP per capita. By contrast, the Doing Business survey, which is based on purely objective indicators, ranks the Hungarian economy higher. Hungary's position in the competitiveness rankings has been relatively stable since the crisis. Most indicator schemes appreciate the improvement of the domestic economic environment and the recovery of the macroeconomic balance. On the other hand, based on the subindicators measuring the institutional environment and the micro-level competitiveness Hungary is in the second half of the regional field and our position is deteriorating.*

*According to the global city rankings covering the large cities of the world, Budapest excels the most in terms of innovation; beside this, favourable costs of living is another factor that distinguishes the Hungarian capital from its competitors. In addition, it is also above the average in the global competition of cities in terms of prosperity, while the financial centre position of Budapest is markedly weak.*

This chapter presents certain alternative development and competitiveness indicators, which slightly modify the view on the state of development and growth potential of the Hungarian economy, as depicted by the development of GDP. After the outline of Hungary's global position based on eleven indicators (Chart 4-1), we assess the development path of Hungary based on two indices related to social development and on three competitiveness indicators, in a regional comparison, also reviewing the individual components of these indicators. As regards social progress, we

review two alternative complex indicators in more detail, which satisfy the following criteria of reliability and comparability:

- the sample covers at least 80 countries,
- available in time series of 4-5 years, as a minimum,
- contains the core indicators that determine quality of life the most, and
- among their sub-indicators they also consider new values of the economy, such as freedom, entrepreneurship, transparency or good governance.

We examine these two complex indicators in the context of the Visegrád Four and Romania, and the Club Med countries (Italy, Spain, Portugal and Greece). We then evaluate the performance measured by the

key global competitiveness rankings, dealing in more detail with the deviations observable with regard to the Visegrád countries. (For more details on the examined indicators see Box 4-1.)

**Chart 4-1**  
Hungary's positions at various social-economical rankings



Note: Relative position - the number of overtaken countries in proportion of the total statistical population (per cent)  
Sources: WEF (2014); WEF (2015); WB (2012); WB (2015); UN (2013); UN (2015); TI (2014); LI (2014); HCSO (2015)

**Box 4-1**

**About the alternative measurement options of development and the state of development**

The most commonly used measure of economic development and wealth is the gross domestic product and some analogous indicators, as well as the per capita values of those. However, these indicators have a number of inadequacies (see Stiglitz et al., 2009). On the one hand, it defines development narrowly and essentially focus on the change in the output volume of material-type goods and services, which is expressed in monetary terms. Even in this narrow range, the consideration of the quality of products and services, as well as the measurement of the government sector’s performance, represent a serious statistical challenge. In addition, the gross domestic product does not deal with the non-material and subjective dimensions of wealth (e.g. health, satisfaction) or the issues of income distribution and (economic or environmental) sustainability, such as e.g. the determination of the costs of non-renewable natural resources. There are major differences between the economic growth, quality of life and social development measured by GDP. In view of the complex nature of measuring economic prosperity and wealth, several international organisations have introduced complex development indicator schemes, based on which they regularly rank the countries under review.

On the other hand, GDP could be applied only to a limited extent when assessing the trends and drivers of economic processes in even in a narrower sense. That is, gross domestic product is a variable, which reflects the already achieved economic development and says little about the growth and development potential of the economy. In order to assess these development prospects, several institutions publish complex competitiveness indicator schemes, which – in addition to the macroeconomic performance

– evaluate the institutional environment determining corporate competitiveness and certain functional attributes of the companies.

### **Legatum Prosperity Index (LPI)**

The London-based Legatum Institute has published this complex index annually since 2009. The subject of the survey is the economic development of the countries, the welfare level of the society determined on the basis of objective and subjective aspects, and trends in the citizens' satisfaction. Using 89 indicators, the Legatum Prosperity Index (LPI) examines 8 dimensions related to economic performance and welfare: economic performance, entrepreneurship and opportunity, governance, social capital, personal freedom, education, health, safety and security. In 2009-2011, the institute ranked 110 countries and thereafter 142 countries. The index has no score value; the report publishes the ranking of the surveyed countries in respect of both the composite indicator and the individual dimensions examined.

### **Human Development Index (HDI) and Inequality-Adjusted Human Development Index (IHDI)**

The United Nations Organisation has published the Human Development Index (HDI), a complex indicator measuring social development, since 1980. The widely acknowledged composite indicator combines the life expectancy, education and per capita income indicators. In Hungary, the basic value of the Human Development Index (HDI) increased at the fastest rate – in contrast to the GDP growth – between 1990 and 2000, and has stagnated since 2008.

An advanced version of HDI is the Inequality-Adjusted Human Development Index (IHDI), published by the UN since 2010, which examines – by analysing several variables – the progress and development of mankind taking social exclusion into consideration. This index considers four indicators along the education and standard of living dimensions: life expectancy at birth, the expected years of schooling for children, the mean years of schooling in the age bracket of 25 years and older and the GNI per capita logarithm. The value of each sub-index is adjusted by the inequalities observed in the society and typical for the given sub-index: higher inequalities reduce the value of the indicator. In 2010, the index examined 139 countries and thereafter 132; in 2013 it has already covered 145 countries.

The international competitiveness country rankings of certain institutions fulfilling a global role are gaining increasing importance in the measurement of economic dimensions of development; these rankings are compiled annually, relying on a quantified methodology, often based on corporate surveys and also taking subjective factors into consideration.

### **Competitiveness ranking by the World Economic Forum**

The complex competitiveness indicator elaborated by the World Economic Forum (WEF) assesses the description of the economy's efficiency on an international scale, along factors grouped into twelve pillars: institutions, infrastructure, macroeconomic environment, health and primary education, higher education, product market efficiency, labour market efficiency, financial market maturity, technological readiness market size, business sophistication and innovation. The WEF survey is based on a questionnaire answered by corporate managers (about 100 persons in Hungary), and in addition certain dimensions are assessed with the assistance of statistical indicators.

### **Competitiveness ranking of the International Institute for Management Development (IMD)**

IMD's competitiveness ranking covers a narrower range of the countries. The survey method is similar to that of the WEF indicator, using a combination of corporate manager questionnaires and statistical data. The economic performance is ranked based on 84 criteria, such as the size, growth, maturity and

prospects of the domestic economy, its international commercial and investment relations, the situation of employment and prices. Government and business effectiveness are both characterised by 71 indicators, while infrastructure is described by 116 indicators.

#### **“Doing Business” competitiveness ranking**

The World Bank’s Doing Business indicator assesses the possibilities in 189 countries with regard to starting and managing a business. This report differs from the previously presented competitiveness methodologies, its unique factor that it does not use a questionnaire-based survey, but is based on purely objective indicators. For this purpose they survey the legal and institutional environment of such typical situations that generally occur during the operation of an enterprise (e.g. the number of procedures required for starting a business, the time and costs needed for this). The survey has been performed since 2004, but the individual dimensions have only been aggregated into a single indicator since 2014. Accordingly, the aggregated ranking of the countries is also only interpretable from 2014.

Global **city rankings** – based on similar principles – are prepared in ever greater numbers to assess the large cities of the world based on various criteria, the theme of which extends from the assessment of economic performance and competitiveness through liveability to environmental quality or cost of living.

# 4.1 Economic and social development

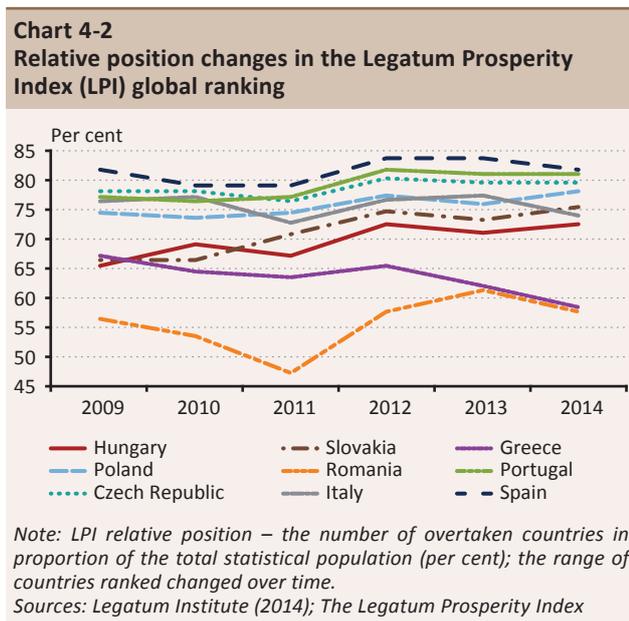
## 4.1.1 LEGATUM PROSPERITY INDEX (LPI)

**Hungary’s LPI indicator has improved in the last five years, but within the group of the Central-European and Mediterranean countries it belongs to the lower segment.** In the ranking of the 142 surveyed countries, Hungary ranked 39<sup>th</sup> in 2014 (Chart 4-2). Within the field of the Visegrád Four (V4) supplemented by Romania and the Club Med countries it was Hungary’s relative position in the ranking that improved the most, after Slovakia, by about 7 percentage points between 2009 and 2014, but still, it precedes only Romania and Greece among these nine countries.

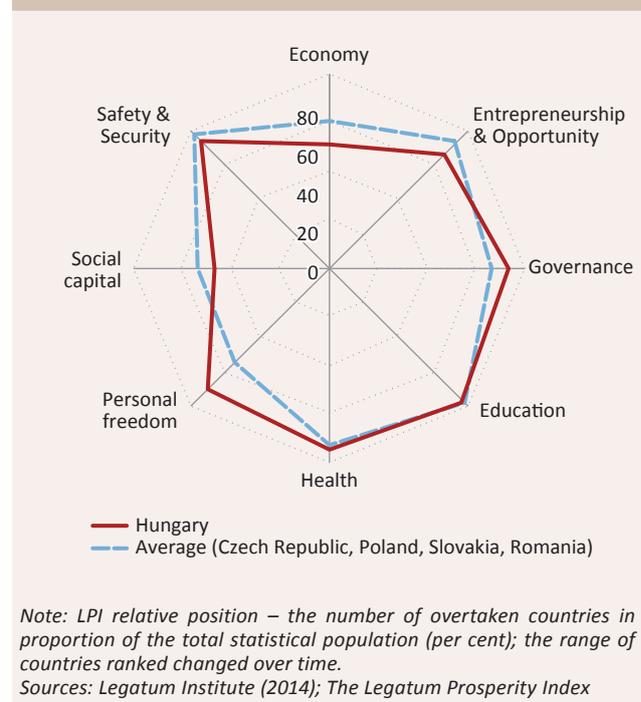
The average relative position of the **V4** countries in the **LPI**, which is over 65 per cent, fluctuates on an almost uniform path; in their case the downturn after 2012 was followed by a moderate improvement from 2013.

**As regards the development of certain LPI dimensions, in Hungary the change in social capital and education reflects unfavourable processes, while progress was made since the crisis in the freedom and governance dimensions** (Chart 4-3). The governance dimension of the index contains indicators

such as, the value of governance stability measured in years; governance efficiency or the rule of law. A major part of the data assessed by the LPI index comes from the surveys conducted by the Gallup Institute. Based on the representative survey of Gallup World Poll, this dimension also includes social satisfaction with the government’s anti-poverty measures, the level of trust in the judicial systems and the ratio of those considering that the business and government sectors are corrupt. Based on the data of the Gallup World Poll, the sub-indices of social capital include, amongst others, the presence of a supportive social environment, official voluntary work performed in the previous months, the level of general social trust and ratio of those living in marital relationship.



**Chart 4-3**  
Development of the relative positions in the dimensions of the Legatum Prosperity Index (LPI) in Hungary, the V3 countries and Romania

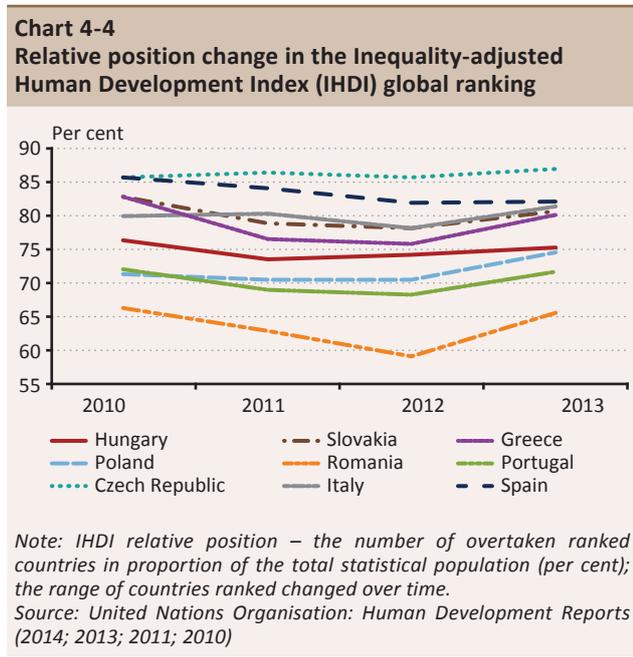


Hungary outperforms the Visegrád region in the personal freedom and governance dimensions, while falling behind the region in economic performance, entrepreneurial opportunities, social capital and the safety and security dimensions.

### 4.1.2 INEQUALITY-ADJUSTED HUMAN DEVELOPMENT INDEX (IHDI)

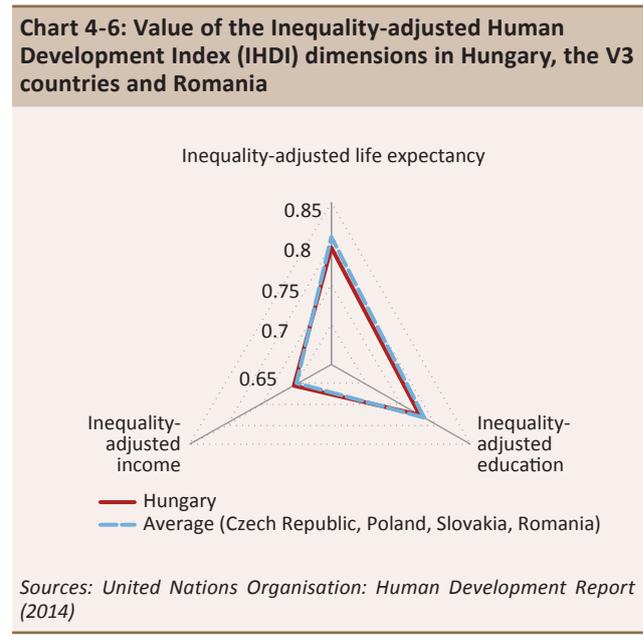
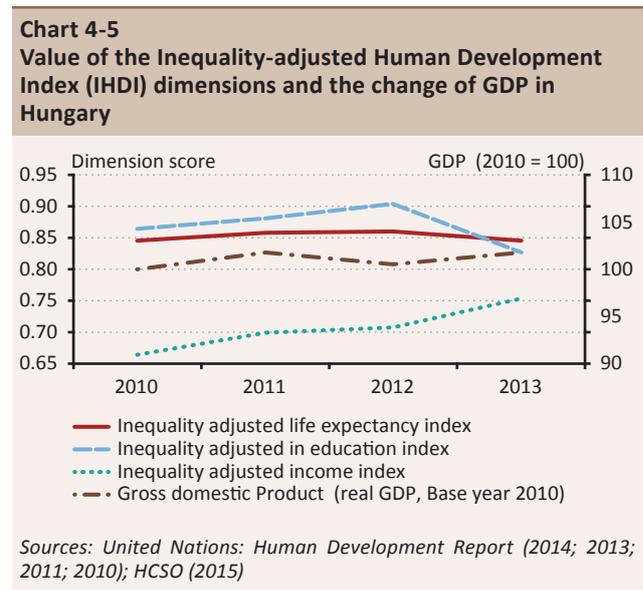
Based on the Inequality-adjusted Human Development Index, Hungary is among the top 30 per cent of the countries in terms of social development. Based on the 2014 report Hungary ranked 36<sup>th</sup> among the 145 countries examined, ahead of Romania, Portugal and Poland.

The relative position of the CEE countries and the Club Med countries in the UN's IHDI indicator generally worsened until 2012 (in contrast to the LPI) and thereafter it seems to have improved. The strengthening of the relative positions seen after 2012 is also attributable to the higher number of countries included in the list. Hungary's path shows a different curve compared to the countries examined. The relative position measured in the IHDI worsened until 2011, which was followed by a slow improvement. (Chart 4-4). In the income dimension of the index, Hungary's performance is similar to Visegrád countries; according to the available time series (2010-2013).



The slow rise in the IHDI for Hungary is attributable to the fact that while the income position has been steadily improving since 2010, there is a relative weakening in the education dimension and – to

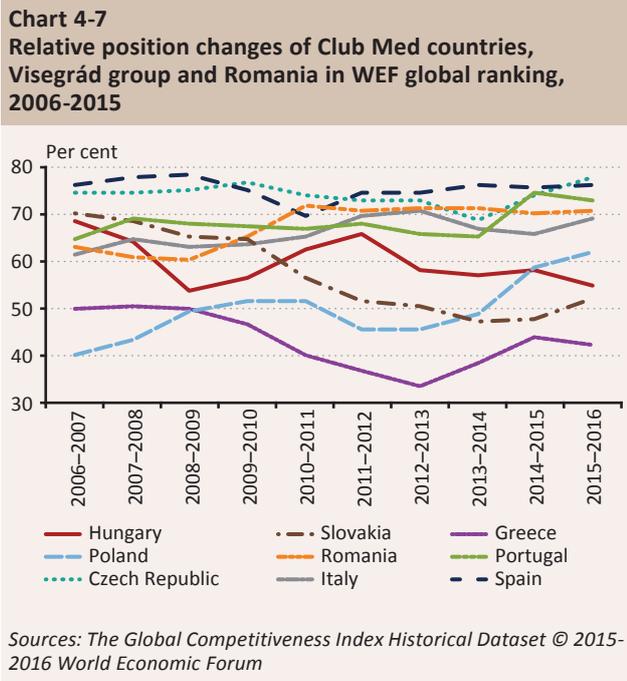
a lesser extent – in the life expectancy at birth dimension of the indicator. In the case of Hungary, these processes may point to the inequalities in access to public services and the conditions of healthy life (Chart 4-5 and 4-6). Although the Hungarian IHD value is pulled upward by the life expectancy dimension in the global ranking, it is important to emphasise that within the EU the situation of Hungary and its region is rather unfavourable. Nowadays, life expectancy at birth, which reflects on healthy life, is precisely the indicator in which the division between the eastern and western regions of the EU in terms of development is the most obvious. (Salamin, 2015)



## 4.2 International competitiveness rankings

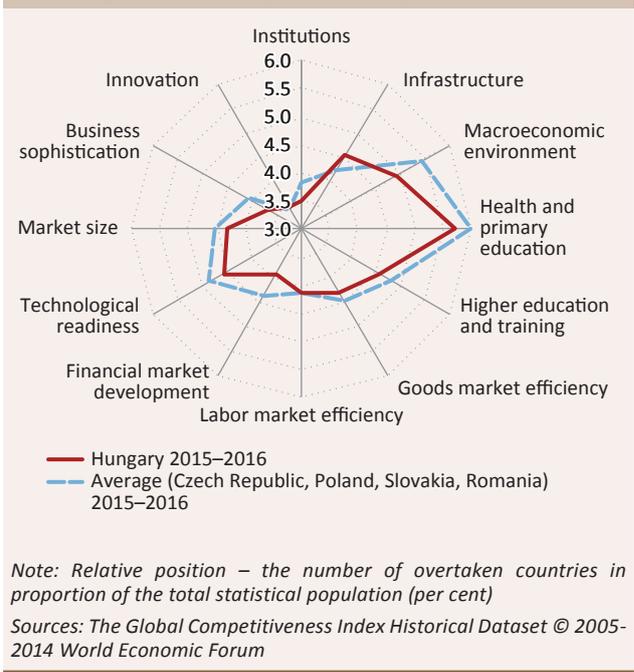
### 4.2.1 COMPETITIVENESS RANKING BY THE WORLD ECONOMIC FORUM

Among the 144 countries surveyed by WEF, Hungary ranked 63<sup>th</sup> in the 2015-2016 survey. In this indicator, Hungary's relative position deteriorated slightly compared to 2008-2009. As regards the countries of the region, Poland also fell, while the relative rankings of the Czech Republic and Slovakia have improved since the crisis (Chart 4-7).



Based on the pillars of the complex indicator, the macroeconomic environment and infrastructure show improving trajectories in Hungary, while the institutions and financial markets reflect worsening processes. In a regional comparison, Hungary performs well in the infrastructure dimension, while the assessment of the labour market and innovation is similar to that of the neighbouring countries. On the other hand, Hungary was scored lower than the regional average in several other dimensions, such as – among others – the institutions, the macroeconomic environment, education, financial market and business sophistication (Chart 4-8).

**Chart 4-8**  
Hungary's competitiveness sub-index positions according to WEF's competitiveness pillars



### 4.2.2 COMPETITIVENESS RANKING OF THE INTERNATIONAL INSTITUTE FOR MANAGEMENT DEVELOPMENT (IMD)

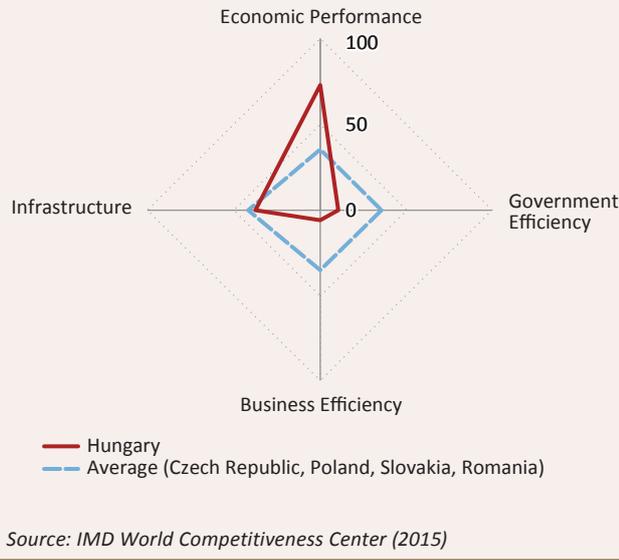
The IMD competitiveness ranking contained 60 countries in 2014 and 61 in 2015. In 2015 and 2014, Hungary kept its 48<sup>th</sup> rank, which is a rearward position among the Visegrád countries (Chart 4-9).

**Table 4-1**  
Hungary's IMD competitiveness rankings in 2011-2015

Hungary's IMD rank	2011	2012	2013	2014	2015
Economic Performance	44	35	44	32	17
Government Efficiency	52	51	52	53	54
Business Efficiency	50	49	55	56	57
Infrastructure	35	35	38	37	39

Sources: IMD World Competitiveness Center (2015)

**Chart 4-9**  
Hungary's score changes in IMD index, 2015



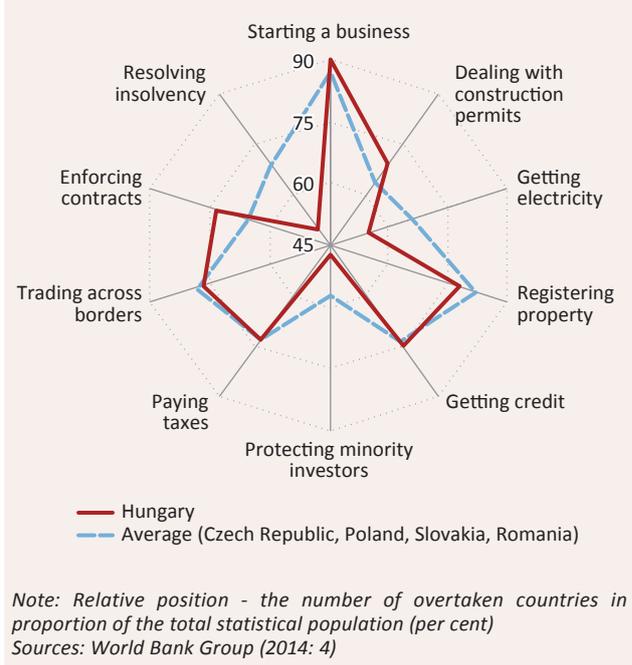
Behind the stable 48<sup>th</sup> place, which corresponds to the 2011-2015 rounded average, the economic performance pillar improved by 27 place (from 44<sup>th</sup> in 2011 to 17<sup>th</sup> to 2015), while in the other three pillars Hungary's positions weakened (2-place decline in government efficiency, 7-place decline in business efficiency and another 4-place decline in infrastructure).

### 4.2.3 "DOING BUSINESS" COMPETITIVENESS RANKING

In 2015, Hungary ranked 54<sup>th</sup> in the global ranking, which is the weakest position among the Visegrád countries.

In terms of the conditions of starting a business, Hungary's performance is favourable in the global ranking. In a regional comparison, both dealing with construction permits and the enforcement

**Chart 4-10**  
Relative position of Hungary, the Visegrád countries and Romania in the 2015 ranking of Doing Business (DB)



of contracts are mentioned as the strengths of the country. On the other hand, there are significant shortcomings primarily in access to electricity, the protection of minority investors and in resolving insolvency (Chart 4-10). Beside these aspects, there is room for improvement in all other dimensions, as Hungary obtained 60-70 per cent of the maximum scores.

Hungary's performance has improved in some areas since the crisis. One of these is the "starting a business" pillar, in which the procedure became simpler and cheaper. The reduced costs of registering property and the decrease in tax burdens (both the tax liability and the time spent on administration) were regarded as steps forward. However, in the other dimensions under review there has been no significant change since 2008.

## 4.3 Position of Budapest in the international rankings

At present, 80 per cent of the world's GDP is generated in urban areas (World Bank, 2015). In the case of Europe, it has proven that in the cities where the number of inhabitants exceeds 1 million the per capita GDP outstrips the European average by 25 per cent (UN, 2014b). The urban concentration of high value added activities is even more apparent in Hungary.

**Table 4-2**  
Weight of the capitals in the Visegrád countries, 2012

	Contribution to national GDP (per cent)	Contribution to the countries population	GDP per capita as a share of the national average (per cent)
Budapest	38,13	17,46	218,38
Bratislava	27,25	11,27	241,94
Prague	24,70	11,84	208,69
Warsaw	12,92	4,44	291,00

Source: EUROSTAT (2015)

As a result of this, Hungary is represented first of all by Budapest in the decision-making process of many large enterprises, particularly in the service sector. Accordingly, the international perception of Budapest and its position in the competition of cities is relevant for the international competitiveness of the entire country.

The international rankings that provide a comparative assessment of the cities list these regions based on different criteria, where the quality of life, liveability, quality of environment, the innovation capacities and economic power relations are of utmost importance. On a global scale, the relative position of Budapest is best in the area of innovation, quality of life and liveability. In the rankings focusing on these aspects, it usually belongs to the top 30 per cent (Chart 4-12).

**Budapest achieved the highest rank in the Global Innovation Cities Index**, where it ranked 64<sup>th</sup> out of 445 ranked countries. This indicator rates the maturity of the background sectors responsible for the cultural assets, the human infrastructure and the favourable innovation environment, as well as the conditions necessary for the creation and development of the network markets. The global list is led by San Francisco, New York and London. In the Central-European region Budapest is overtaken only by Vienna (6<sup>th</sup>) and Prague (62<sup>nd</sup>).

**In the area of liveability, Budapest was ranked high in the Spatially Adjusted Liveability Index**, initiated on an experimental basis by the Economist Intelligence Unit (EIU) in 2012. In this respect, the capital took the 24<sup>th</sup> position out of 70 ranked countries. The ranking is led by Hong Kong, Amsterdam and Osaka. A special feature of the indicator is that in addition to the traditional liveability indicators, it also takes into account the spatial character of the urban environment determining the social welfare and quality of life, as well as the **equal spatial access to the city's green areas**, natural resources and to the **region's cultural values**.

The **cost of living measured by international standards shows a favourable picture**; in the ranking of the most expensive cities Budapest is at the end of the list, which is a favourable position and at present this factor represents a major competitive advantage. In the Mercer ranking, which lists the cost of living, living costs higher than those in Budapest are indicated for 170 cities out of 207 ranked cities.

Based on the positions achieved in the various rankings **Budapest also performed relatively well in the competitiveness and the prosperity dimensions**. In the EIU competitiveness list, within the Central-European region Budapest (35<sup>th</sup>) is preceded only by Vienna (29<sup>th</sup>); which order is similar to the UN's City Prosperity Index, where Budapest (21<sup>st</sup>)

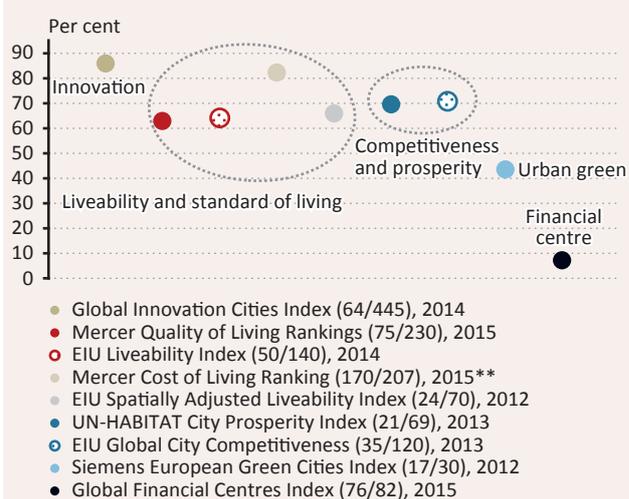
is preceded only by Vienna (1<sup>st</sup>) in the Central-European region. In the five sub-dimensions of the UN indicator – productivity, quality of life, infrastructure, environmental sustainability, equity and social inclusion – Budapest obtained the highest score in **infrastructure**, and thus this performs as a **key factor in its competitiveness**.

In terms of urban environmental quality and financial centre role, Budapest precedes less than half of the cities included in the international lists. As regards the quality of urban environment, Budapest is at the end of the mid-range of the ranked cities of global significance, taking the 17<sup>th</sup> position out of 30 European cities. In this respect, Copenhagen, Stockholm and Oslo have the best position.

As it is evidenced by the respective index, Budapest does not play a central financial role in the international network of cities. This **financial role alone is not a priority factor, however**, as Budapest has a significant weight in terms of the national economic processes, the **lower maturity degree of the financial and capital markets** may represent a **drawback in terms of competitiveness** in the international processes. Based on the index,

New York, London and Hong Kong have the highest level of financial role, while in the Central-European region Budapest (76<sup>th</sup>) is preceded by Vienna (35<sup>th</sup>) and Prague (60<sup>th</sup>).

**Chart 4-11**  
Relative position of Budapest in the ranking of various city indices\*



Note: \* Percentage of the countries preceded in the ranking  
\*\* Percentage of the countries which precede Budapest

Sources: EIU (2012, 2013, 2014); QFC (2015); GIA (2014); Mercer (2015); Transparency International 2014; UN (2013; 2014);

## REFERENCES

EIU HOT SPOTS 2025 – Global City Competitiveness, 2013:

<http://www.citigroup.com/citi/citiforcities/pdfs/hotspots2025.pdf>

EIU LIVEABILITY INDEX, 2014: *Best cities ranking and report*, August 2014

[http://pages.eiu.com/rs/eiu2/images/Liveability\\_rankings\\_2014.pdf](http://pages.eiu.com/rs/eiu2/images/Liveability_rankings_2014.pdf) <https://www.gfmag.com/global-data/non-economic-data/best-cities-to-live>

EIU SPATIAL ADJUSTED LIVEABILITY INDEX, 2013: *Best cities ranking and report*, August 2013

[http://pages.eiu.com/rs/eiu2/images/EIU\\_BestCities.pdf](http://pages.eiu.com/rs/eiu2/images/EIU_BestCities.pdf)

EUROSTAT: Quality of Life (QoL) – Context

<http://ec.europa.eu/eurostat/web/gdp-and-beyond/quality-of-life/context>

EUROSTAT, 2015: Quality of life indicators – measuring quality of life

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality\\_of\\_life\\_indicators\\_-\\_measuring\\_quality\\_of\\_life](http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators_-_measuring_quality_of_life)

EUROSTAT, INSEE, 2011: *Report of the Task Force, Multidimensional measurement of the quality of life*

<http://ec.europa.eu/eurostat/documents/42577/43503/TF3-Final-report-Quality-of-Life/991bffa3-35ff-49a4-8ddb-f0a13e527b9e>

Europe 2020 STRATEGY

<http://eur-lex.europa.eu/legal-content/HU/TXT/?uri=URISERV:em0028>  
[http://ec.europa.eu/europe2020/pdf/targets\\_hu.pdf](http://ec.europa.eu/europe2020/pdf/targets_hu.pdf)

QATAR FINANCIAL CENTRE – GLOBAL FINANCIAL CENTRES INDEX, 2015: [http://www.finance-montreal.com/sites/default/files/publications/gfci17\\_23march2015.pdf](http://www.finance-montreal.com/sites/default/files/publications/gfci17_23march2015.pdf)

GLOBAL INNOVATION AGENCY – GLOBAL INNOVATION CITIES INDEX, 2014

<http://www.innovation-cities.com/innovation-cities-index-2014-global/8889>

- JAKOBI, Á., 2004: *Az információs társadalom területi egyenlőtlenségeinek tartalma és értelmezési lehetőségei.* (Content of the information society's spatial inequalities and ways of interpreting it). In: Hungarian Geographical Conference, Szeged 2004 [http://geography.hu/mfk2004/mfk2004/cikkek/jakobi\\_akos.pdf](http://geography.hu/mfk2004/mfk2004/cikkek/jakobi_akos.pdf)
- WEIMANN J. – KNABE, A. – SCHÖB, R., 2015: *Measuring Happiness: The Economics of Well-Being*, MIT Press
- STIGLITZ, J. E. – SEN, A. – FITOUSSI, J. P.: *Report by the Commission on the Measurement of Economic Performance and Social Progress* <http://ec.europa.eu/eurostat/documents/118025/118123/Fitoussi+Commission+report>
- KERÉNYI Á., 2011: *A Gazdasági Együttműködési és Fejlesztési Szervezet Better Life indexének bemutatása* (Presentation of the Better Life Index of the Organisation for Economic Cooperation and Development) <http://www.asz.hu/penzugyi-szemle-cikkek/2011/a-gazdasagi-egyuttmukodesi-es-fejlesztési-szervezet-better-life-indexenek-bemutatasa/506-526-kerenyia.pdf>
- HCSO Regional Statistical Yearbooks, 2003–2013
- HCSO, Statistical Pocketbook of Counties and Regions, 2011, 2014
- HCSO Statistical Yearbook of Hungary, 2013
- HCSO Social Map of Hungary, 2012
- HCSO Hungary 2013
- HCSO System of Well-being Indicators in Hungary, 2013
- HCSO Statistical Review, 2010/115 “Regional differences in life expectancy at birth”
- HCSO Statistical Review, 2015/54 “Housing prices, housing price index, 2015 Q1”
- HCSO “Regional differences in research and development”, March 2013
- HCSO “Regional differences in economic processes, 2012”; December 2013
- HUNGARIAN PARTNERSHIP AGREEMENT 2014–2020 [http://palyazat.gov.hu/download/52032/Partners%C3%A9g\\_Meg%C3%A1llapod%C3%A1s\\_2014-2020.pdf](http://palyazat.gov.hu/download/52032/Partners%C3%A9g_Meg%C3%A1llapod%C3%A1s_2014-2020.pdf)
- MASTERCARD GLOBAL DESTINATION CITIES INDEX <http://newsroom.mastercard.com/wp-content/uploads/2015/06/MasterCard-GDCI-2015-Final-Report1.pdf>
- MERCER COST OF LIVING, 2015: <https://www.imercer.com/uploads/GM/col2015/e654123/index.html>
- MERCER QUALITY OF LIVING IN CITIES GLOBAL SURVEY, 2015 <https://www.imercer.com/uploads/GM/qol2015/h5478qol2015/index.html>
- MONOCLE’S MOST (25) LIVEABLE CITIES INDEX, 2015 <http://monocle.com/film/affairs/the-monocle-quality-of-life-survey-2015/> [http://www.dailymail.co.uk/travel/travel\\_news/article-3126280/Tokyo-rated-world-s-best-city-live-London-New-York-not-making-25.html](http://www.dailymail.co.uk/travel/travel_news/article-3126280/Tokyo-rated-world-s-best-city-live-London-New-York-not-making-25.html)
- OECD, Better Life Index <http://www.oecdbetterlifeindex.org/>
- SALAMIN G., 2015: Changing Spatial Dimensions in the Current Economic Development of the European Union. In: Salamin, G. (ed.) *Cities in Action Reflecting Global Economic Challenges and Technological Trends with Special reference to the Smart City Concept* [http://issuu.com/mut\\_tudaskozpont/](http://issuu.com/mut_tudaskozpont/)
- SIEMENS EUROPEAN GREEN CITIES INDEX, 2012 – European Green City Index Report, 2012 [http://www.siemens.com/entry/cc/features/greencityindex\\_international/all/en/pdf/gci\\_report\\_summary.pdf](http://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/gci_report_summary.pdf)
- SUSTAINABLE DEVELOPMENT IN THE EUROPEAN UNION – 2013 monitoring report of the EU sustainable development strategy, 2013 <http://ec.europa.eu/eurostat/en/web/products-statistical-books/-/KS-02-13-237>
- YALE UNIVERSITY, THE WORLD ECONOMIC FORUM, 2014 [http://issuu.com/yaleepi/docs/2014\\_epi\\_report](http://issuu.com/yaleepi/docs/2014_epi_report)

WORLD BANK, 2012:

<http://siteresources.worldbank.org/INTUNIKAM/Resources/2012.pdf>

UNITED NATIONS, 2014a:

<http://hdr.undp.org/en/content/table-3-inequality-adjusted-human-development-index#b>

UNITED NATIONS, 2014b: World Urbanization Prospects, the 2014 revision, Final report

<http://esa.un.org/unpd/wup/FinalReport/>

UNITED NATIONS, 2013:

<http://hdr.undp.org/en/content/table-4-gender-inequality-index>

TRANSPARENCY INTERNATIONAL, 2014:

<http://www.transparency.org/cpi2014/results>

LEGATUM INSTITUTE, 2014:

<http://www.prosperity.com/>

WORLD BANK, 2014:

<http://www.doingbusiness.org/rankings>

THE HERITAGE FOUNDATION, The Wall Street Journal, 2015:

<http://www.heritage.org/index/>

WEF THE GLOBAL COMPETITIVENESS REPORT 2014-2015

[http://www3.weforum.org/docs/WEF\\_GlobalCompetitivenessReport\\_2014-15.pdf](http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf)

WORLD ECONOMIC FORUM, 2015:

<http://reports.weforum.org/global-information-technology-report-2015/network-readiness-index/>

WEF THE GLOBAL COMPETITIVENESS REPORT 2014-2015

[http://www3.weforum.org/docs/WEF\\_GlobalCompetitivenessReport\\_2014-15.pdf](http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf)

WORLD BANK GROUP, 2014: Doing Business 2015. *Going Beyond Efficiency. Comparing Business Regulations for domestic firms in 189 Economies.* A World Bank Group Flagship Report

<http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB15-Chapters/DB15-Report-Overview.pdf>

(downloaded 2015.12.07.) ISBN (electronic): 978-1-4648-0352-9 (P.4. Table 1.1)

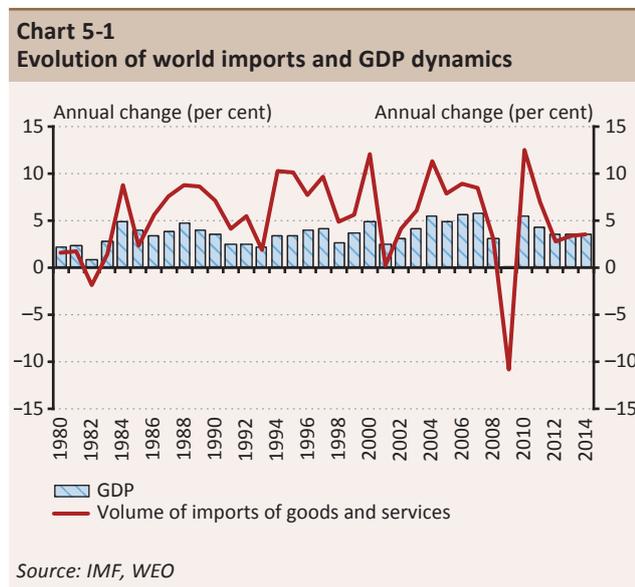
---

## 5 Special topic: World trade slowdown and impacts on the Hungarian economy

*Hungary is a small, open economy thus its growth prospects fundamentally depend on the performance of its export markets and the trade intensity of growth. In recent years, the world trade fell short of its pre-crisis dynamics, both in absolute terms and compared to GDP growth. According to the literature, the slowdown may be linked to both cyclical and structural factors. Downside risks stemming from decreasing world trade dynamics may be mainly mitigated by the rise in export market share and the increase in the domestic value added content of Hungarian exports. The special topic below analyses the underlying reasons of the phenomenon and collects the potential conclusions regarding Hungary. Understanding the processes may help assess the Hungarian economic growth prospects more accurately.*

## 5.1 Stylised facts

**World trade and global economic activity typically move closely together**, but there have been periods when world trade growth significantly exceeded the increase in world output (Chart 5-1). There was a spectacular divergence in the growth rates from the second half of the 1980s until the pre-crisis period, which was also attributable to major geopolitical factors.



Thus, as a result of the impacts from the second half of the 1980s until the pre-crisis years the global trade expanded at a rate that exceeded the growth rate of world GDP (Chart 5-2). On the other hand, external trade dynamics, which declined as a result of the global economic crisis, typically expanded only to the same degree as economic activity in the recovery period, and thus **world trade measured as a share of GDP stayed below its 2008 peak in recent years**. The decline measured as the income elasticity of trade also identifies the same trends. World trade to global economic performance ratio reached 1.9 per cent on average between 1981 Q1 and 2007 Q4, while between 2011 Q3 and 2014 Q3 it fell to 0.9 percent (ECB, 2015). The analysis of Constantinescu et al. (2015) finds a significant structural break in the period of 1986–2000 examining the income elasticity of world trade. Elasticity estimated for the given period is almost twice as high as the values estimated

for the years between 1970–1985 and 2001–2013. The recent decline in trade was primarily related to the moderate performance of trade in goods, while trade in services was essentially stable during this period.

**Chart 5-2**  
World trade to GDP

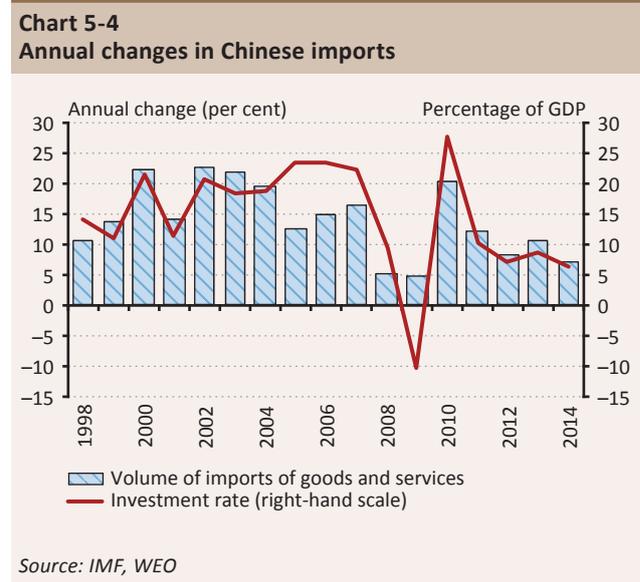
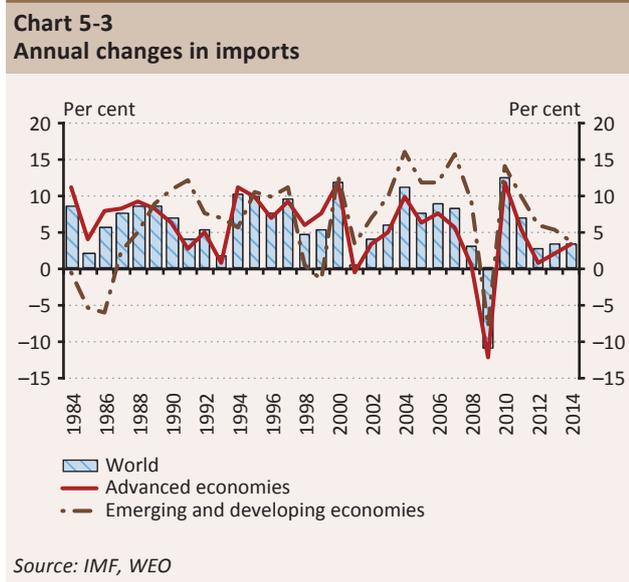


**Although the decline in external trade is wide-ranging, unique trends can be identified by country groups** (Chart 5-3). In advanced economies, there was a strong decline in import dynamics after 2010, which was mainly attributable to the moderate economic performance of the euro area. The region, which was hit hard by the global economic crisis, was forced to perform major balance sheet adjustments in the recovery period, which further deteriorated the already uncertain demand environment. The decreasing domestic demand – and particularly investments – lead to a decline in the imports of the euro area due to their relatively high import content. In this period, trade between member states – which fell into recession from time to time – also declined considerably.

**Poor intra-euro area trade had a negative, albeit negligible effect on the development of world trade.** Eliminating intra-euro area trade from the world trade only increases the income elasticity of world trade by 0.1 percentage point in the period between

2011 Q3 and 2014 Q3 (ECB, 2015). The results are the same regarding EU member states as well. Import dynamics recovered in 2013 and 2014, in line with the strengthening economic performance of the USA and the euro area.

On the other hand, the years since the outbreak of the crisis are also marked by reforms facilitating the structural change in the Chinese economy, which aim to divert the economy to household consumption instead of import-intensive investments.



In the period covered, the trade performance of emerging countries was primarily shaped by the performance of China. The years between the accession to the World Trade Organisation and the outbreak of the economic crisis were characterised by import growth of almost 18 per cent on average, whereas in 2014 Chinese imports only increased by 7 per cent year-on-year (Chart 5-4). Apart from the declining import demand for commodities, imports of processed goods also fell in China, which also affected the performance of other Asian and advanced economies due to China’s significant role in the global economy (Hoekman et al., 2015).

Apart from China, moderate performance was also observed in several other emerging countries. Due to poor domestic demand, Brazil slipped into recession in 2014, Russia was hit by the falling oil prices and the Russian–Ukrainian conflict and the subsequent sanctions, while the bankruptcy of Argentine further undermined the country's already poor growth prospects. Contrary to the advanced economies, no adjustment can be traced in the evolution of trade in emerging countries and China during 2013–2014; the annual growth rate of imports has been declining continuously since 2010.

## 5.2 Cyclical and structural explanations

Based on stylised facts it is obvious that the moderate trade dynamics observed in recent years are linked to the relatively poor economic performance of the recovery period. Thus, the decline may be attributable – at least partially – to cyclical factors. Based on Freund (2009) and Abiad et al. (2014), **the negative impact of crises on trade is not limited to the crisis period, but may persist in the medium term as well.** Accordingly, economic growth of the euro area and China – which is more moderate than before – may also have a negative impact on trade also in the beginning of the recovery period via the decreasing domestic demand components with high import content (investments and consumption).

Declining demand as a result of the crisis may have had a major impact on trade dynamics; however when examining the trends of recent years, the question arises to what extent the structural factors may have played a role – in addition to the cyclical impacts – in the process.

In his decomposition analysis, Constantinescu et al. (2015) find that the cyclical factors – such as insufficient demand – were dominant during the global economic crisis and in the first year of the recovery, while their contribution decreased in recent years. According to their calculations almost half of the downturn between 2012 and 2013 may be attributable to the long-term component. Based on the results, global trade has lost growth momentum since the crisis not only due the slower dynamics of global economic activity, but also to the lower income sensitivity of trade.

Based on the results of the bivariate BVAR estimation performed by the ECB (2015), the decrease in trade dynamics observed in recent years has been attributable primarily – but not exclusively – to the decline in economic activity. The fall of income elasticity of trade from 1.6 to 1.3 per cent may also point to weaker world trade. According to the analysis of Hoekman et al. (2015), cyclical factors are the most dominant, **but several structural – non-macroeconomic – factors may also contribute to the decline of world trade growth.**

Besides the cyclical effects implied by the global recession and the moderate economic performance of the recovery period, structural factors also play an important role. **These include, in addition to the past decades' major geopolitical events, the global value chains' expansion reaching a limit, the change in the relative importance of import-intensive GDP components and the protectionist trade policy.** The shift of global trade structure to components with lower income elasticity may also decreased the income elasticity of trade (Hoekman et al., 2015).

The extraordinary expansion of world trade from the second half of the 1980s until the pre-crisis years was linked to the reintegration process followed by the political transitions of the Central and Eastern European countries, which boosted trade through the reinstated economic relations with Western Europe. Another determinant structural factor is the export-oriented growth strategy introduced by China, which was followed by its accession to the World Trade Organisation (2001).

In addition, the broadening of global value chains – which expanded external trade relations as a result of the large enterprises' outsourcing processes – was also a process that dominated the era (Hoekman et al., 2015). Global value chains contributed to the expansion of world trade through productivity and the increase in economies of scale in the last almost twenty years. The info-communication technological progress of the 1990s led to the fast expansion of global value chains, and thereby to the increase in the income elasticity of trade (Constantinescu et al., 2015). The change in elasticity may primarily be triggered by countries with large weight (USA, China). In addition, the crisis may have increased the uncertainties related to foreign trade relations, and the various natural disasters (earthquake in Japan, flood in Thailand) supported the enterprises' cost efficient decisions upon the value chain planning (Hoekman et al., 2015)

Another explanation for the decline in income elasticity is the change in the relative importance of GDP components (ECB, 2015). When economic

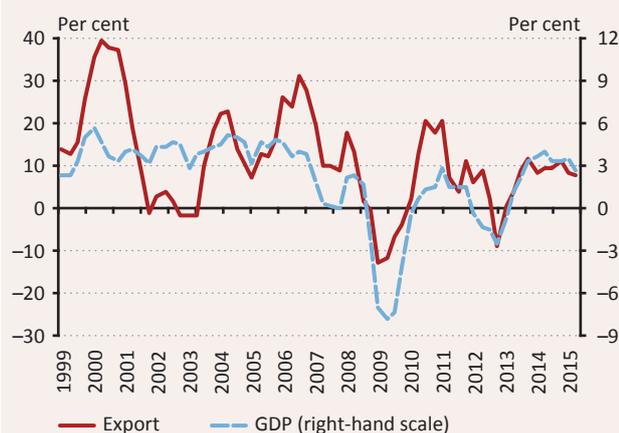
activity declines via demand components with high import content – such as household consumption or investments – trade may decrease to a larger degree. Dadush (2015) links half of the decrease in world trade as a share of GDP to investments due to the postponed corporate (amortisation substitute) and household investments.

The role of protectionism in the decline of income elasticity is also not negligible (ECB, 2015). Although no sufficiently long and reliable time series are available for the evaluation of the processes, the strengthening of commercial protectionism may be assumed with regard to the last five years based on the available information.

## 5.3 Potential conclusions for Hungary

Hungary is a small, open economy, thus world trade trends influence Hungarian exports and imports significantly. The average 20 per cent export growth of the pre-crisis years fell to almost 8 per cent in the period of recovery (Chart 5-5). **As a result of strong trade integration, Hungary's economic performance was generally surpassed by export dynamics. However in recent years the difference decreased, which corresponds to international trends.**

**Chart 5-5**  
Annual changes in Hungarian imports and GDP



Source: HCSO

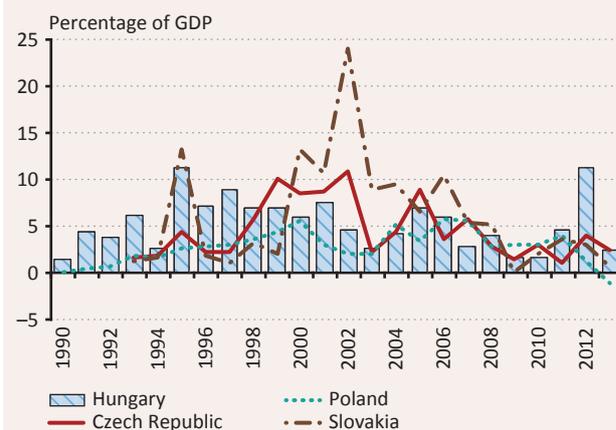
Based on the literature, cyclical factors play a major role in the growth rate of trade, and thus the import dynamics may increase in the foreseeable future in parallel with the recovery of the economy. However, as a result of the structural factors that influence the trade income elasticity – primarily the fact that the further expansion of global value chains reached its limit – the growth of trade may remain below its pre-crisis dynamics in the coming years.

External trade performance is of the utmost importance, **as net exports were one of the most important components of Hungarian economic growth in the past period.** Moderate dynamics of global trade may carry a downside risk regarding Hungarian growth, but the increase in export market

share and the rise in domestic value added content of exports may stimulate external trade.

**Export market share can typically be increased by expanding export capacities** and attracting foreign direct investments (FDI). The broadening of global value chains, which expanded dynamically in the past decades, decelerated recently, and thus the slowing FDI may intensify competition in the region (Chart 5-6). This highlights the importance of domestic competitiveness and the reliability of business environment.

**Chart 5-6**  
FDI inflows to countries in the region



Source: UNCTAD

Due to the moderate FDI flow, the increase in export market share also becomes more difficult, thus a further opportunity for stimulating Hungarian exports may be **the raise in domestic value added content** within exports. The increase in value added content is primarily related to the strengthening of local supplier relations, and thus the consolidation of the suppliers that gradually settled in after the large manufacturing investments of recent years may have had a positive impact on the Hungarian export dynamics. The increasing involvement of the domestic SME sector may become a determinant element of the process.

## 5.4 Summary

This special topic deals with the slowdown of world trade dynamics compared to the historical average, which may also influence the national economic performance through the openness of Hungary. Based on the literature, the fall in world trade growth and the change in its income elasticity may be linked to both cyclical and structural factors. Although the temporary fall in demand linked to the global economic crisis may have had a negative impact on trade in the recovery period. Looking ahead, after the phasing out of cyclical effects, world

trade dynamics may continue to fall short of the pre-crisis average. This may be attributable to structural factors such as the past decades' major geopolitical events, the expansion of global value chains reaching a limit, the change in relative importance of import-intensive GDP components and the protectionist trade policy. Hungary may mitigate the downside risks arising from the potential deceleration of world trade primarily through the increase in export market share and the rise in domestic value added content of exports.

### REFERENCES

ECB (2015): *Understanding the weakness in world trade*, Economic Bulletin, Issue 3, pp. 33-42, European Central Bank.

CONSTANTINESCU, C. – MATTOO, A. – RUTA, M. (2015): *The Global Trade Slowdown: Cyclical or Structural?*, IMF Working Papers 15/6, International Monetary Fund.

HOEKMAN, B. (ed.) (2015): *The Global Trade Slowdown: A New Normal?*, VoxEU.org eBook, CEPR Press.

ABIAD, A. – MISHRA, P. – TOPALOVA, P. (2014): *How Does Trade Evolve in the Aftermath of Financial Crises?*, IMF Economic Review, 62, pp. 213-247.

FREUND, C. (2009): *The Trade Response to Global Downturns: Historical Evidence*, Policy Research Working Paper Series 5015, World Bank, Washington, DC.

DADUSH, U. (2015): *Should We Worry About the Great Trade Slowdown?*, Policy notes & Policy briefs 1520, OCP Policy Center.

# List of charts and tables

## LIST OF CHARTS

Chart 1-1: Gross fixed capital formation, % of GDP	11
Chart 1-2: Nominal policy rate	11
Chart 1-3: 10-year USA government bond yields, deflated by consumer prices, 7-year moving average	12
Chart 1-4: Working-age population contribution to GDP growth	13
Chart 1-5: Working-age population	13
Chart 1-6: Growth in output per hour worked	14
Chart 1-7: Quality adjusted relative price index	15
Chart 1-8: Share in national income of the highest earning 1 per cent in the USA	17
Chart 1-9: Productivity loss due to non-optimal allocation	21
Chart 1-10: US companies: Operating cash is rising and buy-backs are huge	25
Chart 1-11: European industrial corporations' expenditures and liabilities, per cent of net sales	25
Chart 1-12: Stages of venture capital investment	25
Chart 1-13: Risk of loss for different stages at which investments are made	25
Chart 1-14: Sources of funding for basic research in 2008	26
Chart 1-15: Sources of funding for US R&D in 2008	26
Chart 2-1: Ratio of those over 65 within the population in the various country groups of the world	31
Chart 2-2: Distribution of the Hungarian population by age groups, 1960–2060	31
Chart 2-3: Decomposition of the change of the Hungarian population, 1990–2014	32
Chart 2-4: Developments of total fertility rates in the countries of the European Union, 2000–2013	32
Chart 2-5: Development of total fertility rate in certain country groups, 2000-2013	32
Chart 2-6: Life expectancy at age 60 in the countries of the European Union in 2000 and in 2013	33
Chart 2-7: Life expectancy at age 30 by educational attainment in Hungary, 2012	33
Chart 2-8: Difference between the life expectancy of persons with tertiary education and secondary education at age 30, 2012	33
Chart 2-9: Official data and estimated data for the net balance of migration in Hungary	35
Chart 2-10: The distribution of the Hungarian emigrants and the Hungarian population by age, emigrants between 1989 and 2013	35
Chart 2-11: Labour income acquired abroad by Hungarian residents	35
Chart 2-12: Ratio of persons over 65 in EU countries in 2015 and in 2060	36
Chart 2-13: Projected development of the old-age dependency ratio in EU countries in 2015 and in 2060	36
Chart 2-14: Dependency ratios in Hungary, 2015-2060	36
Chart 2-15: Projected development of the working-age population between 2015 and 2060 in Hungary based on different population projections	37
Chart 2-16: Impacts of ageing on economic growth	39
Chart 2-17: Growth impact of the change in the working-age population compared to 2000-2009	39
Chart 2-18: Average life expectancy at birth and per capita GDP in the counties of Hungary	40
Chart 2-19: Average life expectancy at birth	40
Chart 2-20: Natural increase/decrease, ageing index, internal and international net migration in Hungary 2014	41
Chart 2-21: Natural increase/decrease, ageing index, internal and international net migration in Hungary 2014	41
Chart 2-22: Per capita GDP in 2014 and the human capital index in 2015	42
Chart 2-23: Change in the share of tertiary educated persons within the working-age population and GDP growth between 1994 and 2007	42

Chart 2-24: Activity rate of the population aged 15-64 by educational attainment	43
Chart 2-25: Employment rate of the population aged 15-34 by educational attainment within 5 years after the obtaining the highest educational attainment	43
Chart 2-26: Employment rate of the population aged 15-64 by educational attainment	44
Chart 2-27: Self-reported skills mismatch among employees and self-employed	44
Chart 2-28: Net relative earnings of the population aged 18-64 by educational attainment	45
Chart 2-29: Share of tertiary graduates in the population and the relative wage gap	45
Chart 2-30: Share of tertiary graduates among the population aged 25–64	45
Chart 2-31: Share of tertiary graduates among the population aged 25-34 in 2000 and in 2013	46
Chart 2-32: Share of tertiary graduates in certain age groups, 2014	46
Chart 2-33: Share of tertiary graduates among the population aged 25-64 in the regions of Hungary, 2014	46
Chart 2-34: Tertiary graduates in science and technology per 1,000 inhabitants aged 20-29 years	47
Chart 2-35: Ratio of those the highest education level of whom is secondary school qualification within the population aged 25-64 years, 2014	47
Chart 2-36: Share of population with upper secondary educational attainment level in the population aged 25–64 in the regions of Hungary, 2014	47
Chart 2-37: Number of languages spoken, 2011	47
Chart 2-38: Pupils learning English and German	48
Chart 2-39: Structure of secondary education in European Union countries	48
Chart 2-40: Results of PISA test in mathematics	49
Chart 2-41: Share of best and worst performing students in the 2012 PISA test, mathematics	49
Chart 2-42: PISA test results in Visegrád countries between 2003 and 2012, mathematics	49
Chart 2-43: Ratio of early school leavers among the population aged 18-24 in EU countries	50
Chart 2-44: Participation in lifelong learning in the EU countries	50
Chart 2-45: Participation in lifelong learning in the EU countries	51
Chart 2-46: Share of participants in education or training by age and educational attainment	51
Chart 2-47: Average PISA test scores and per capita spending on primary and secondary education	51
Chart 2-48: Public spending on education in 2011	52
Chart 2-49: Developments of public spending on education between 2005 and 2012	52
Chart 2-50: Change in spending on educational levels between 2005 and 2011	52
Chart 2-51: Total expenditure on education by level	53
Chart 2-52: Expenditure per student by educational institutions and public spending on education as a percentage of GDP, 2011	53
Chart 2-53: Spending on education per student by levels, 2011	54
Chart 2-54: Teachers' salaries relative to earnings for tertiary-educated workers aged 25-64 in secondary education, 2012	54
Chart 2-55: Preston curve on the data of the OECD countries, 2012	55
Chart 2-56: Life expectancy at birth in the EU countries, 2013	56
Chart 2-57: Development of life expectancy at birth in Hungary and in EU-28 countries, 2002–2013	56
Chart 2-58: Healthy life expectancy at birth in the EU countries, 2013	57
Chart 2-59: Potential years of life lost, 2012	57
Chart 2-60: Public and private spending on healthcare	59
Chart 2-61: Life expectancy at birth and spending on healthcare as a per cent of GDP in the OECD countries, 2013	59
Chart 2-62: Participation rate in EU countries	60
Chart 2-63: Participation rate by highest level of education in the EU countries, 2014	60
Chart 2-64: Participation rate by age group in the EU countries, 2014	60
Chart 2-65: Participation rate of women aged 15-49 in the EU countries, 2014	61
Chart 2-66: Comparison of the participation rate in the Visegrád Four countries	61
Chart 2-67: Comparison of the participation rate in the Visegrád Four countries	61
Chart 2-68: Proportion of inactive people aged 15–64 by reasons for not seeking employment	62
Chart 2-69: Contributions by groups resulting from differences in participation rates, 2014	62

Chart 2-70: Proportion of different groups in the Hungarian population, 2014	62
Chart 2-71: Tax wedge of single, childless workers workers with two children earning 67 per cent of average wage, international comparison, 2014	63
Chart 2-72: Kaitz index in international comparison, 2014	63
Chart 2-73: Proportion of inactive people aged 15–25 by main reason for not seeking employment	64
Chart 2-74: NEET ratio in OECD countries, 2013	64
Chart 2-75: Development of participation rate of young people	64
Chart 2-76: Development of participation rate of people over 50 years	65
Chart 2-77: Contribution to the total deviation of participation rate of Hungarian women to EU28	65
Chart 2-78: Ratio of part-time workers in EU countries, 2014	66
Chart 3-1: Real GDP growth compared to neighbouring countries, 2004	70
Chart 3-2: Sectoral GDP growth compared to the average for the Visegrád countries since 2004	70
Chart 3-3: Contribution to intra sector GDP growth of manufacturing industries in percentage points	71
Chart 3-4: Contribution to intra sector GDP growth of market services sectors in percentage points	71
Chart 3-5.a: Number of employed and hours worked since 2004, per capita	72
Chart 3-5.b: Number of employed and hours worked since 2004, by hours worked	72
Chart 3-6.a: Sectoral employment growth compared to the average of the Visegrád countries since 2004, per capita	73
Chart 3-6.b: Sectoral employment growth compared to the average of the Visegrád countries since 2004, by hours worked	73
Chart 3-7.a: Real labour productivity: per employee	74
Chart 3-7.b: Real labour productivity: per hours worked	74
Chart 3-8.a: Sectoral productivity growth compared to the average of the Visegrád countries since 2004, per capita	74
Chart 3-8.b: Sectoral productivity growth compared to the average of the Visegrád countries since 2004, by hours worked	74
Chart 3-9: Decomposition of value added growth in the national economy: regional comparison	75
Chart 3-10: Decomposition of value added growth in manufacturing: regional comparison	75
Chart 3-11: Decomposition of value added growth in market services: regional comparison	75
Chart 3-12.a: Aggregate TFP in the region	76
Chart 3-12.b: Aggregate TFP in the region	76
Chart 3-13: GDP and aggregate TFP growth in manufacturing	77
Chart 3-14: Decomposition of manufacturing growth	77
Chart 3-15.a: Regional decomposition of GDP proportionate investment rates	78
Chart 3-15.b: Results of SME loan applications in 2014	78
Chart 3-16.a: Innovations in the past three years (2011-2014) – share of respondents (product innovation)	79
Chart 3-16.b: Innovations in the past three years (2011–2014) – share of respondents (prod./sales innovation)	79
Chart 3-16.c: Innovations in the past three years (2011–2014) – share of respondents (organisational innovation)	80
Chart 3-16.d: Innovations in the past three years (2011-2014) – share of respondents (marketing innovation)	80
Chart 3-17: R&D expenses to GDP, by sector	80
Chart 3-18.a: Difference in labour productivity of the highest and lowest deciles of Hungarian firms	81
Chart 3-18.b: Difference in labour productivity of the highest and lowest deciles of Hungarian firms	81
Chart 3-19: Static reallocation across sectors of the economy	81
Chart 3-20.a: Employment decomposed by firm size	82
Chart 3-20.b: GDP decomposed by firm size	82
Chart 3-21: Average labour productivity of enterprises compared to large enterprises	83
Chart 3-22: Decomposition of manufacturing productivity reallocation	83
Chart 3-23.a: Concentration of exports in goods	85
Chart 3-23.b: Concentration of exports in services	85

Chart 3-24: Share of most important product groups in the value of exports: 2007–2014	85
Chart 3-25: Distribution of the value of exported services over service categories, 2010–2014 average	86
Chart 4-1: Position of Hungary based on different economic and social maturity rankings	89
Chart 4-2: Relative position changes in the Legatum Prosperity Index (LPI) global ranking	92
Chart 4-3: Development of the relative positions in the dimensions of the Legatum Prosperity Index (LPI) in Hungary, the V3 countries and Romania	92
Chart 4-4: Relative position change in the Inequality-adjusted Human Development Index (IHDI) global ranking	93
Chart 4-5: Value of the Inequality-adjusted Human Development Index (IHDI) dimensions and the change of GDP in Hungary	93
Chart 4-6: Value of the Inequality-adjusted Human Development Index (IHDI) dimensions in Hungary, the V3 countries and Romania	93
Chart 4-7: Relative position changes of Club Med countries, Visegrád group and Romania in WEF global ranking, 2006-2015	94
Chart 4-8: Hungary's competitiveness sub-index positions according to WEF's competitiveness pillars	94
Chart 4-9: Hungary's score changes in IMD index, 2015	95
Chart 4-10: Relative position of Hungary, the Visegrád countries and Romania in the 2015 ranking of Doing Business (DB)	95
Chart 4-11: Relative position of Budapest in the ranking of various city indices	97
Chart 5-1: Evolution of world imports and GDP dynamics	101
Chart 5-2: World trade to GDP	101
Chart 5-3: Annual changes in imports	102
Chart 5-4: Annual changes in Chinese imports	102
Chart 5-5: Annual changes in Hungarian imports and GDP	105
Chart 5-6: FDI inflows to countries in the region	105

## LIST OF TABLES

Table 1-1: Comparison of balance sheet recession and secular stagnation	19
Table 2-1: Expected size of the Hungarian population until 2060 according to different population projections	34
Table 2-2: Hypotheses of Hungarian population projection	34
Table 2-3: Headcount of the working-age population, 1960–2009 (million persons)	38
Table 2-4: Expected development of the working-age population, 2010–2059	38
Table 2-5: Expected development of the share of working-age population, 2010–2059	38
Table 2-6.a: Standardised mortality rates in Hungary and Visegrád countries for men, 2012	58
Table 2-6.b: Standardised mortality rates in Hungary and Visegrád countries for women, 2012	58
Table 3-1: Employment and productivity of exporting firms relative to non-exporter firms	86
Table 4-1: Hungary's IMD competitiveness rankings in 2011-2015	94
Table 4-2: Weight of the capitals in the Visegrád countries	96



# Count István Széchenyi

(21 September 1791 – 8 April 1860)

Politician, writer, economist, minister for transport in the Batthyány government whom Lajos Kossuth referred to as ‘the greatest Hungarian’. His father, Count Ferenc Széchenyi established the Hungarian National Museum and Library; his mother, Julianna Festetich was the daughter of Count György Festetich, the founder of Georgikon, an institution for the teaching of agricultural sciences.

With his ideas – whose message remains relevant even today – and his activities both as a writer and a politician, István Széchenyi laid the foundation for modern Hungary. He is one of the most eminent and significant figures in Hungarian politics whose name is associated with reforms in the Hungarian economy, transportation and sports. He is also known as the founder and eponym of numerous public benefit institutions, a traveller all across Europe and an explorer of England as well as the champion of economic and political development at the time. István Széchenyi recognised that Hungary needed reforms in order to rise, and considered paving the way for a Hungary set on the path of industrialisation and embourgeoisement to be his calling in life.

Published in 1830, his *Credit* outlined the embourgeoisement of Hungary and summarised its economic and social programme. Count Széchenyi intended this writing to make the nobility aware of the importance of the country’s desperate need for a social and economic transformation. Another work of his, *Stádium* [Stage of Development] (1833) listed the cornerstones of his reform programme in 12 points, including the voluntary and compulsory liberation of serfs; the abrogation of *avicitas* (inalienable status of noble property); the right of possession for the peasantry; and the freedom of industry and commerce. This work of Széchenyi already conveyed the idea of equality before the law and the general and proportionate sharing of taxation.

After the revolution in 1848 István Széchenyi joined the Batthyány government and as minister embarked vigorously on implementing his transportation programme.

**GROWTH REPORT**

**2015**

Print: Prospektus–SPL consortium

H-8200 Veszprém, Tartu u. 6.

