

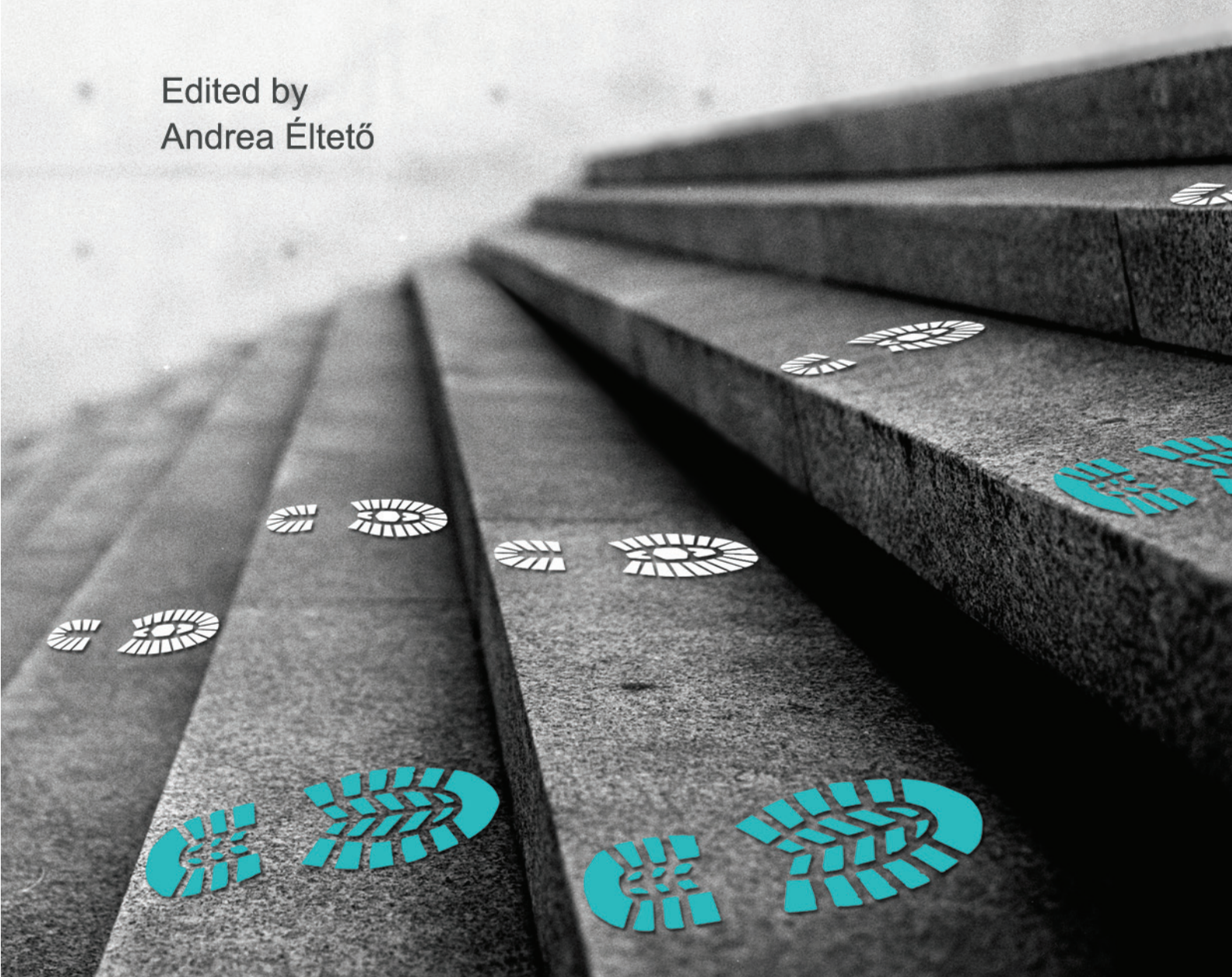


CENTRE FOR ECONOMIC AND REGIONAL STUDIES OF THE
HUNGARIAN ACADEMY OF SCIENCES
INSTITUTE OF WORLD ECONOMICS

MIND THE GAP

Integration Experiences of the Ten Central
and Eastern European Countries

Edited by
Andrea Éltető





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Foreword

This book is a collection of studies on the integration paths of those ten Central and Eastern European member states of the European Union, that joined the EU in 2004 and 2007 respectively (i.e. the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, as well as Bulgaria and Romania). Their experiences are analysed from different angles.

This region has a common historical and cultural heritage and is often considered as a separate or homogeneous group. Furthermore these countries have been called “new member states” following the Eastern enlargement of the EU. In our opinion, enough time has passed already to abandon this expression, and the novelty of the enlargement has faded. Therefore in this book we refer to this region as the “EU10”.

The enlargement of the EU in 2004 was a historical step because of the large number of countries acceding at one time, and because of the entry conditions being different from the previous enlargements. It is difficult to evaluate the effects of EU membership during the past decade due to the fact that the global crisis broke out just in the middle of this period, and exerted a serious impact on the economic development of all the member states including the EU10. In this volume we provide a kind of snapshot on the present situation and a description of the trends leading here. The overall picture underpins the fact that this region is far from being homogeneous. At the same time, beyond heterogeneity, there are also converging trends of certain macroeconomic indicators (such as growth rates, inflation, current account balances or public finance trends) in the post-crisis period. The region also faces many shared challenges (e.g. emigration of labour, integration into the common agricultural policy or the development of human resources) that are extensively treated by the authors too.

The first introductory pages by *Margit Rácz* elaborate some thoughts on the adhesion circumstances, the crisis and their consequences for the region. The study by *Krisztina Vida* starts with the legal and institutional aspects of integration and then goes on analysing the development of the most important macroeconomic trends including GDP growth, catching up, competitiveness and public finances. Her paper sheds light on the clear differences between the more divergent post-accession and pre-crisis developments of the EU10 and highlights an unfolding convergence of many key macroeconomic indicators in the past few years. In the following pages, written by *Norbert Szijártó*, especially the monetary policy features and financial integration of the EU10 are in focus. The choice of appropriate exchange rate regime, as well as the introduction of inflation targeting in larger EU10 countries contributed to successful disinflationary process in the region. Even though transition has passed and foreign participation is higher in EU10 banking system than in other emerging regions, financial markets are still less integrated than those in old euro area countries.

The study of *Andrea Éltető* concentrates on the changes in the dynamics and structure of foreign trade of the EU10. Geographical orientation, concentration and most traded products are analysed providing evidence for the different inclusion patterns of these countries into the global value chains. *Miklós Somai* writes about the agricultural sector in the EU10 region and states that the heterogeneous development since the accession is partly due to the general social and economic framework in the given country that can help or hamper the

development and modernisation of agriculture. Another selected sector that determines economic development in several EU10 members is the automotive industry. *Gábor Túry* shows the structural characteristics of this industry and highlights the differences between production patterns in EU10 countries.

The availability of qualified human capital has been traditionally an important value of the EU10 region. Employment trends and labour market developments are monitored by the study of *Annamária Artner*. It is shown that labour market and social improvements in the region were broken by the crisis in 2008, nevertheless, a tangible wage convergence took place among the most and least developed members of the EU. In his paper *István Kőrösi* illustrates that the utilization of human capital is far from being satisfactory; research and development expenditures are still low and in most cases the educational system suffers from lack of resources and proper development strategy. Free movement of labour within the EU opens up new opportunities, but emigration from the EU10 countries has not always contributed to a more efficient utilization of the available human capital of these countries. The study of *Klára Fóti* focuses on this topic and analyses the consequences of intra-EU mobility for the labour force and the sending countries.

The virtue of this book is that all the ten countries are evaluated in every chapter, thereby providing an overall comparative view. We recommend this volume for all researchers, professors, students, as well as for policy-makers who are interested in the development of the Central and Eastern European economies as members of the European Union.

Andrea Éltető
editor

Thoughts about the first decade of membership

Margit Rácz

New accession criteria

The enlargement of the EU in 2004 was different in many ways from the previous ones. Ten countries joined the EU, such a large number of countries never accessed together to the Community before. This accession was all the more extraordinary since the candidate countries wanted it much more than the EU-15 countries. In the case of this enlargement not only the ordinary law harmonization, but the Copenhagen criteria were to be implemented by the candidates, so the EU set further conditions for the countries wishing to enter.

The EU10 countries are characterized by their common history in geopolitical sense. They were members of the Council for Mutual Economic Assistance, the Warsaw Pact, they had strong relations with the Soviet Union, and with the Soviet political and economic system for a long time. The three Baltic States were even members of the Soviet Union, their autonomy came into existence after the fall of the Soviet system. After the political changes it was a natural need for these countries to join the European Union. However, the EU-15 states felt certain distrust for the candidates, that was the reason for settling the Copenhagen criteria. The European Council has decided about the five accession criteria in 1993 at the Copenhagen Summit. The European Commission had to take into consideration these points by the time of publishing the provisional opinion about the candidate countries. Four from these criteria is prescribed for the candidates and one for the EU.¹ These criteria express a wish that the new countries will be able to function according to the rule of law and market economy. From today's perspective, it is understandable that the integration maturity of the candidates was tested in this way. At the same time we must emphasize that neither in 1993 nor later has there been any measure taken to clarify the criteria of "rule of law and market economy". At the time of the Barcelona Summit the criteria had been completed with a sixth one, resulting from the fear and suspicion of the "mega enlargement" process. The new rule obliged candidate countries to strengthen their administrative capacity. In June 2000 – as an attempt for homogenization - the Feira Summit of the European Council emphasized that the speed of negotiation processes depends on the effective national adoption and implementation of the legal achievements of the EU, the "acquis communautaire". During the accession negotiations, the candidates were examined by the European Commission regarding the adoption of the rules of the internal market. If the countries have active market economy, than the accession to the common market would have to function properly. After joining the EU, the Chambers of Commerce and Industry of all the new member states were asked to indicate to the Commission if any discrimination happens against a company on the internal market.

During the accession process certain issues came into force that stemmed from the actual situation of the European Union. One of these issues was the free movement of workers, which is a fundamental one of the "four

¹ Copenhagen criteria: 1/ political: stability of institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities; 2/ economic: existence of a functioning market economy and the capacity to cope with competitive pressure and market forces within the Union. 3/ acceptance of the Community *acquis*: ability to take on the obligations of membership, 4/ ability to take on the obligations of membership, including adherence to the aims of political, economic and monetary union 5/ the Union's capacity to absorb new members.

freedoms": here a temporary derogation came into force. The EU-15 countries could decide in a time framework of seven years whether open their employee market or not. A transitive regulation was also that the derogation in agricultural finances, the entitlement for direct payments had been extended during 10 years gradually.

Before the accession, partners signed association agreements resulting in customs unions between the signatories. During the two period of customs reduction, the EU decreased customs earlier than the candidates. In this respect the market accession took place gradually.

Except for the monetary policy, all the other common policies were adopted. The accession to the Economic and Monetary Union is also part of the accession protocol, without precise accession date. The new member states had to respect the convergence criteria of Maastricht Treaty regarding their fiscal policy. Since the 2004 accession, only three countries joined the EU: in 2007 Bulgaria and Romania, that are not part of the Schengen Agreement yet and in 2013 Croatia. There is a widespread debate whether the Community suffers from "enlargement fatigue" after the mega enlargement of 2004. Ten years of membership gives the opportunity to analyze and judge this period from EU-15 and also from EU-10 point of view at the same time.

International economic environment during the first ten years

The new member countries suffered the effects of the world economic crisis since 2008. This has been a sovereign debt crises, it differs from the other crises after World War II in its character and content. Keeping the eurozone together has become a problem, many new rules have come into force. Crisis management is a challenge to the Community, member countries have not managed to reach consensus on how to solve the problems.

Already seven new member states have joined the euro area, the Czech Republic, Poland and Hungary, Romania and Bulgaria are still outside. The crisis of the eurozone did not originate from the new EU10 countries, the real problems that required new forms of finance came from Greece, Ireland, Portugal and Spain. (In 2013, Cyprus had sovereign debt crisis as well, and received support from the EU). Thus, the economic situation in the eurozone's Southern member states gave more reason to worry, than the ones that joined in 2004 and were relatively poor compared to the EU average.

Due to the debt crisis, new regulations were applied, that forced EU member states to carry out a stricter fiscal policy than before. At the same time, the EU had to face serious employment and growth problems and country specific problems emerged. The crisis has increased differences between member state performances.

If we judge the period of the EU10 countries after enlargement, we cannot disregard the fact, that after the first three years, the agenda of the following seven years was determined by the fight against crisis and against problems generated by the crisis. Therefore, the difficult situation of the EU countries was caused by the illiquid international capital market and not by the internal relations of the EU.

The lobby power of the European Union at international level at crisis times depends on how can the EU enforce its supranational rules on the member states. As for this crisis began as a worldwide subprime crisis, the world should have changed the rules of the international capital markets in order to avoid similar crises in the future. But this did not really take place. The new member states had to accommodate in such an EU that was not able to orientate itself properly. This caused further problems, and opened new lobby channels at national levels.

After the crisis, in the core EU15 the unemployment rate jumped high, the growth was low, and this period is characterized by frequent elections and personal changes in financial minister positions. It is evident that the new European institutions managing the EU from 2014 on have to find a way out from this situation.

The EU10: similar initial conditions, diverging performances

The lack of market economy and rule of law, and their creation sustainability resulted in different development paths. The EU10 do not form a homogeneous group. (Of course this homogeneity did not exist before joining the EU either.) The differences of starting conditions reflected the extent of dictatorship in the given country before the collapse of the political system. There were notable differences for example in the degree of private ownership. After the changes, a significant private ownership developed in these countries.

Evaluation of the post accession years is difficult, because the crisis breaks the period from 2008. All similarities and differences have a role in the success of a country that is defined by the degree of economic recovery and convergence.

Table 1: Variation of GDP per capita, EU10, percent

	1995-1999	2000-2004	2005-2009	2010	2011	2012	2013	2014	2015
European Union	-	1.9	0.5	1.7	1.5	-0.7	-0.1	1.3	1.7
Euro area	2.2	1.4	0.2	1.7	1.3	-0.9	-0.6	1.0	1.5
Estonia	7.1	7.8	1.3	2.6	9.5	4.0	0.8	2.3	3.4
Latvia	5.3	8.4	2.6	0.8	7.3	6.5	5.1	4.6	4.9
Lithuania	5.4	7.9	3.6	3.7	8.5	5.1	4.3	4.1	3.9
Slovenia	4.4	3.5	1.9	0.9	0.5	-2.7	-1.2	0.6	1.2
Slovakia	4.1	3.9	5.0	4.2	3.6	1.6	0.8	1.9	2.7
Czech Republic	2.3	3.7	3.0	2.2	2.0	-1.1	-1.0	2.0	2.3
Hungary	2.6	4.5	0.5	1.3	1.9	-1.2	1.4	2.4	2.3
Poland	5.9	3.3	4.7	2.9	4.5	2.0	1.6	3.3	3.5
Bulgaria	0.2	6.5	4.4	1.1	4.4	1.2	1.4	5.4	5.7
Romania	0.7	6.3	4.8	-0.6	2.8	0.8	3.8	2.7	2.9

Source: European Economic Forecast, 2014/3.

If we compare the EU10 on the basis of a five years average, we discover that only the three Baltic countries and Poland reached data above 5% between 1995 and 1999 (Table 1). If we analyze the next five years, only Baltic countries, and the two newcomer countries from 2007 reached that level. If we consider the 2005-2009 period, Slovakia was the only country reaching 5%. However, some countries realized unbroken economic development. Between 2011 and 2013 the GDP in the EU and in the euro area was shrinking. On the other hand, among the EU10 there were also countries having slowing growth. In Slovenia and the Czech Republic, GDP shrank in the last two years of the period. Compared to the EU or to the eurozone average, EU10 had better performance. It is noteworthy that GDP has not decreased in the Baltic States, Poland and Bulgaria.

The first ten years and the catch-up

The development of the European integration so far did not create such a long-term successful catch-up model, upon which the EU10 countries can build. The results of the crisis can still be seen in 2014: in the Southern member states that joined in the 1980s, there had been no sustainable growth model, which could have provided stable catching up process. Probably the crisis effects will influence the regional division of labour model, which was the result of globalization. In 2014, the EU has to face several types of growth challenges, without universally accepted solutions.

During the European Parliament's hearing, Bienkowska, the new Polish Commissioner in charge of the internal market pointed out that there will not be growth without stable industrial basis. She named one of her priorities to improve the industrial competitiveness of the EU. If Europe wants to be a prosperous, competitive and environmentally sustainable, the share of industry has to increase to 20% in the EU's GDP until 2020. She also stated that internationally the energy prices are the highest in the EU. Regarding industrial production, she declared that the biggest problem is the dramatic fall of investments. She would like to take special care of leading European industries like the car industry, chemical industry and also defense industry.² The Commission creates an EUR 300 billion growth package to boost growth, investment and employment.³ If growth and employment problems are not treated, that could cause even a new recession period from 2015.

The IMF is also concerned about sustainable growth. However, their proposed solutions to these problems are totally different from those of the Commission. Christine Lagarde, the chief executive of IMF highlighted three main areas, where IMF has to react. The first is growth and employment: for example the properly prepared and implemented infrastructural investments could help. The second is the analysis of financial stability and risk – the task of the organization is to draw attention to the global dangers. The third is the area of labor market and social security reforms. Capital should be reallocated for infrastructure and employment creation investment to launch economic growth. This could negatively effect on the financial balances of the countries, however, in short-term, the creation of demand is so important, that the IMF itself considers the balance of national public finances secondary in the short run.⁴

Catching up is a long-term task. In the short run, countries must always face current challenges. It cannot be judged whether the short-term solutions could lead to stable convergence in the long run. Still, the EU10 countries do not seem to have a strategy for a middle class-based market economy that is stable and competitive. It might be that such strategy cannot even be created. In any case, the European Union should recognize that the cohesion policy solutions established so far might not decrease economic heterogeneity. A good example for that is the crisis in the Southern EU member states, its adequate and deep analysis could contribute to recognize similar problems EU10 countries might face decades later.

² http://ec.europa.eu/about/juncker-commission/docs/2014-ep-hearings-reply-bienkowska_en.pdf

³ http://ec.europa.eu/about/juncker-commission/priorities/01/index_en.htm

⁴ <http://www.imf.org/external/np/speeches/2014/101014.htm>

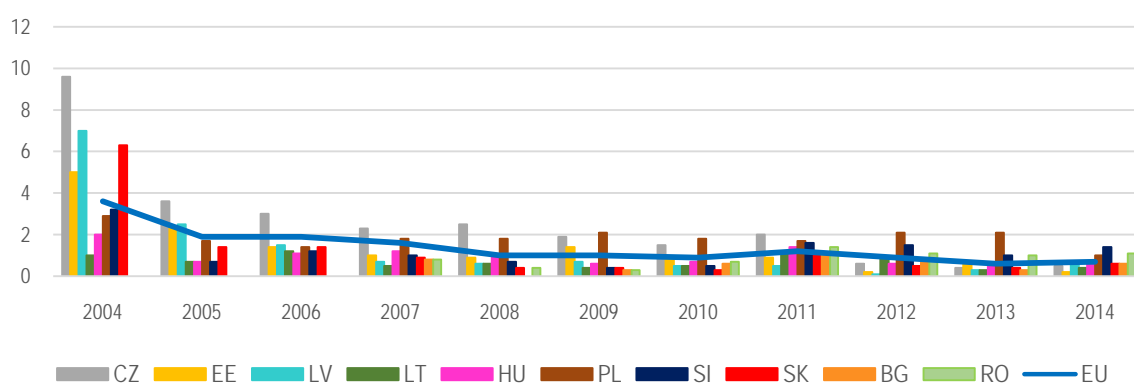
Comparative analysis of integration developments in the EU10 countries: Trends of adaptation and catching up

Krisztina Vida

Institutional integration, application of single market law, use of EU funds

When acceding to the European Union, the new member states joined a legal community with the obligation of timely and accurate implementation of EU law. The European Commission closely monitors the member states' performance with special regard to transposition of single market directives. In this respect⁵ the newcomer countries had an extremely heterogeneous performance in the year of accession (2004) followed by a quick adaptation process (see Figure 1). As a result, in terms of transposition deficit, these countries are at around 1% level (close to the EU average) which shows a high degree of discipline. Regarding infringement cases (see Figure 2) they were usually on the rise a few years after accession, followed by an improving trend in general. In this field the overall performance of the EU10 has been very good, almost constantly remaining under the EU average – with the sole exception of Poland. The latter country has been struggling with EU law especially on transport, environment (emissions) as well as health and consumer issues. For the whole group in general, the most problematic dossiers seem to be environment-related directives, but taxation or agriculture could also be mentioned. All in all however, it must be emphasized that currently (in 2014) the EU10 countries have just a few contentious cases (ranging between some 10 and 49) which should be compared to the around 1,200 single market directives in force.⁶

Figure 1: Transposition deficit of single market directives
percent of total

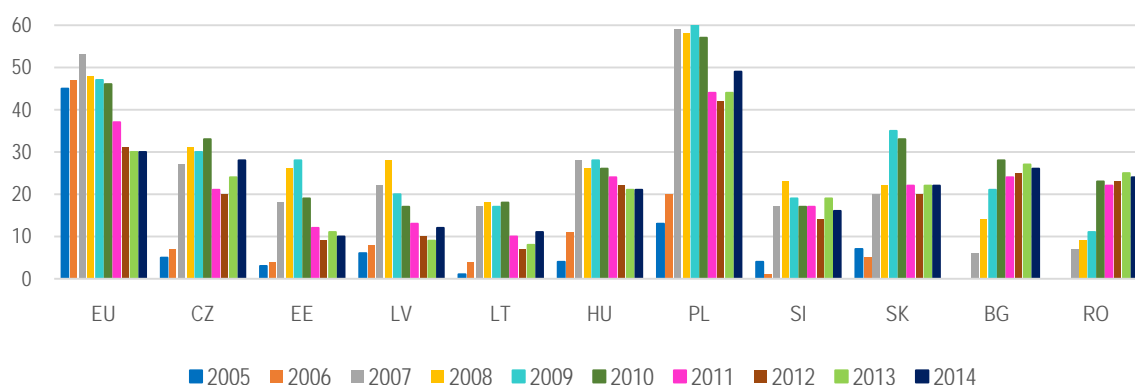


Source: European Commission(2014a) (for Romania and Bulgaria data only since 2007)

⁵ European Commission (2014a)

⁶ European Commission (2014b), p. 4.

Figure 2: Number of infringement cases



Source: European Commission (2014a) (for Romania and Bulgaria data only since 2007)

With regard to institutional integration, the newcomers have been efficient and successful. First of all, filling up the positions in the European administration was a rather smooth process, although finding well trained people, really fit for the tasks at the EU institutions was not easy in the beginning (mainly regarding interpreters/translators).⁷

Furthermore, five of the ten countries have already assumed successful Council presidencies – Slovenia in 2008, the Czech Republic in 2009, Hungary and Poland in 2011 and Lithuania in 2013 – enabling their administrations to gain a deep knowledge and understanding of EU-level decision-making mechanisms.⁸ These countries' politicians proved to be active in the European Parliament too. In March 2014, there were five representatives from the EU10 region from among the 15 MEPs of the year (this time nominated also of the whole term).⁹ It should also be mentioned that seven of ten capital cities – namely Warsaw, Prague, Budapest, Ljubljana, Tallinn, Riga and Vilnius – are hosting a European agency or independent body out of 40 such institutions.¹⁰

Last but not least, as a general observation, it should also be highlighted that the EU10 never formed a blocking minority that would put a break on further integration. On the other hand, they were able to represent common interests and ideas, especially in the field of preserving cohesion assistance in the 2014-2020 period, energy policy cooperation or promoting Eastern Partnership.

Another indicator of “institutional maturity” is the use of EU funds by the beneficiary countries. Here the EU10 countries could be characterised by a long learning process. Even though the Eastern enlargement was the first where the applicant countries had – via the pre-accession funds – the opportunity to prepare for the absorption of greater amounts of non-reimbursable assistance, the use of those funds has still been relatively slow and not without problems in several new member states. While – thanks to the n+2 rule¹¹ – by 2014 the contract ratios have improved tremendously everywhere, the actual payments are still lagging behind (see Table 1). In this

⁷ Bruxinfo (2004)

⁸ The remaining five countries will hold the presidency of the Council in the following order: Latvia (2015), Slovakia (2016), Estonia and Bulgaria (2018) and Romania (2019).

⁹ Ms Roza Thun from Poland, working on internet policy and digital market, Mr Jan Olbrycht also from Poland, responsible for sustainable built environment, Ms Kinga Gál from Hungary, fighting for minority rights and linguistic diversity, Mr Alojz Peterle from Slovenia responsible for health issues, and finally Mr Marian J. Marinescu from Romania promoting research and innovation.

(<http://www.mepawards.eu/winners>)

¹⁰ http://europa.eu/about-eu/agencies/index_en.htm

¹¹ According to the n+2 rule, the recipient countries can prolong the implementation of EU cohesion assistance by two years after the end of the financial framework, i.e. until the end of 2015.

respect the worst performer is Romania and the best one is Estonia (being at 37% and 77% respectively). Given that the contracted money has to be spent by the end of 2015, recently an “absorption boom” can be witnessed in many of the EU10 which has a very positive impact on economic recovery.

Table 1: Absorption of EU funds (2007-2013) by the EU10, 2014

Country	Contracted grants % of total	Paid grants % of total
Bulgaria	100	54
Czech Republic	92	64
Estonia	96	77
Latvia	96	70
Lithuania	99	74
Hungary	100	62
Poland	95	64
Romania	94	37
Slovenia	93	62
Slovakia	98	53
Average	97	63

Source: KPMG¹²

The overall absorption performance has been more heterogeneous than the sectoral distribution of EU assistance: nine out of the EU10 have been overwhelmingly investing into infrastructure (between ca. 60-80% of the total grants), followed to a more modest extent by human capital and research activities. The only exception was Slovenia, where, most of the money went into R&D as well as information technology and communication, thanks to high quality infrastructure and due to a different policy approach.¹³

Catching up

One of the main reasons for joining the European Union by the Central and Eastern European countries was the ultimate objective of gradual convergence of living standards to the EU average. Catching up can be measured with several indicators. In this study three basic series are used. The first index is the development of GDP per capita. Figure 3 illustrates well that none of the EU10 countries could reach the EU average in the past ten years but some closing up has been taking place, even if at different paces. This was due to two parallel phenomena at the same time. The two best performers, Slovenia and the Czech Republic recorded since 2009 a slight decline and stagnation respectively, both suffering from a longer economic recession than the rest of the group. On the other hand, an especially spectacular catching up (reaching of around 20 percentage points between 2004 and 2013) took place in the case of Poland, Slovakia, the Baltic states, and Romania, and a modest one in the case of Bulgaria and Hungary.

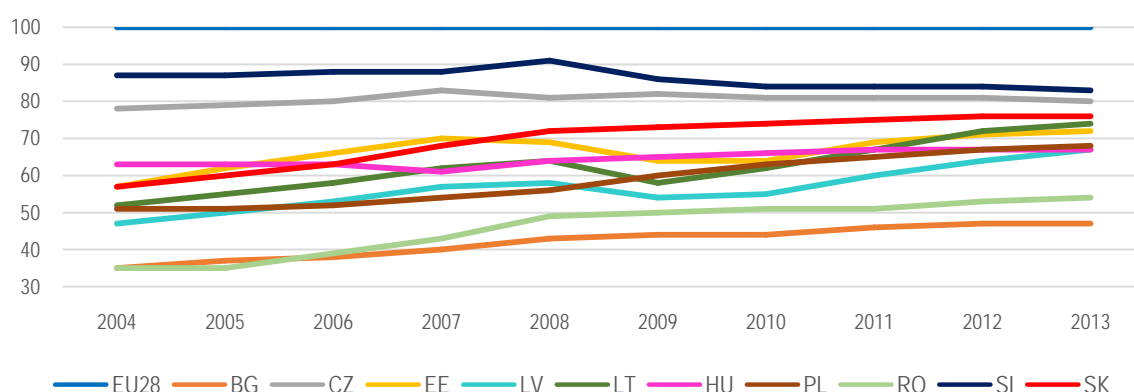
As a result of these trends, the gap among the EU10 countries has narrowed significantly by 2013 compared to 2004 (from 35-87% to 47-83% of EU28 average) and the whole group got closer to the Union average too. The

¹² KPMG (2014), p. 12.

¹³ KPMG (2013), p. 16.

main question in the post-crisis period is, whether a more dynamic growth in the coming years would trigger a faster convergence to the EU average or whether this process will be a protracted one. Another question is, whether the gap within the EU10 would continue narrowing, or would they take a more diverse path of catching up.

Figure 3: GDP per capita
PPS, EU28=100



Source: Eurostat

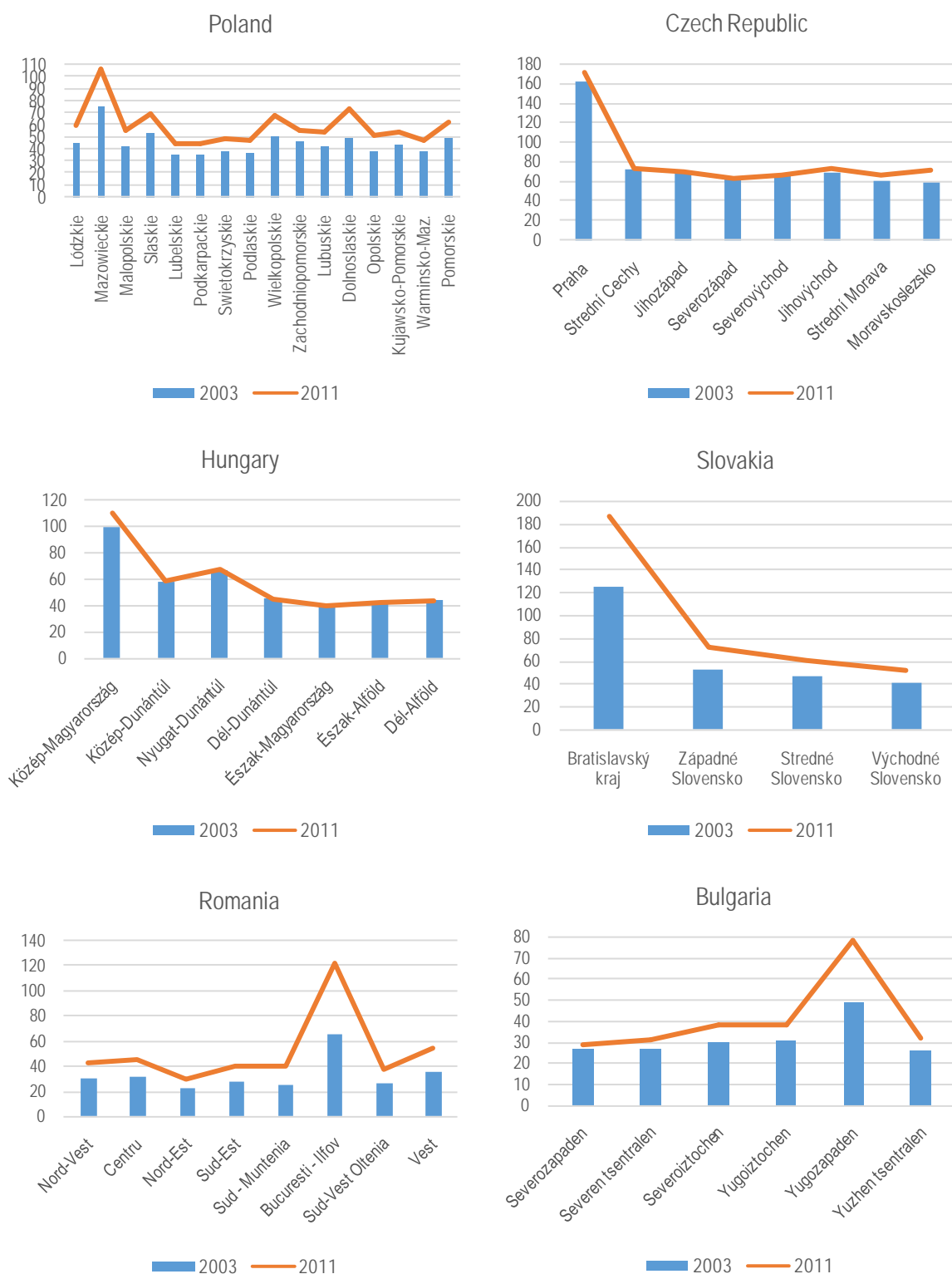
The second indicator is regional convergence. The available regional data show a significant heterogeneity of the EU10 countries. First of all, it must be mentioned that from the ten analysed countries, only six have more than two NUTS2 regions (the Baltic states being one single region each and Slovenia having two regions: the Western one being at the EU level and the Eastern one being still under 75% of EU average). A common feature in all of them is the significant development of their central regions embracing the capitals. Moreover, from 2014 onwards, the central regions of Poland, the Czech Republic (where the capital city itself is a region), Slovakia, Hungary, Slovenia and Romania are all categorised as more developed regions (i.e. above 90% of EU average, not eligible for the Cohesion Fund), while only Bulgaria and the three Baltic states remain entirely under the less developed (below 75%) status.

Another similar feature across the mentioned six bigger countries is that most of them are struggling with considerable regional gaps between the central regions and the rest of the country, which did not diminish in the past years (on the contrary, it rather widened in the case of Slovakia, Romania and Bulgaria). Those six countries also had a very different regional convergence record in general. As Figures 4-9 show, most of the regions did register tangible improvement by 2011¹⁴ compared to 2003, starting from very different levels. A clear exception to this trend could be witnessed in Hungary with virtually no regional convergence at all, and the Czech Republic where the regions – starting on a significantly higher level – showed a very modest increase of GDP per capita. The discrepancies among those six countries' non-central regions is quite significant: according to the 2011 Eurostat data, roughly the half of those regions were below 50% while the other half could be found between 50 and 75% of EU average.¹⁵

¹⁴The 2011 data were the latest available in the Eurostat database in October 2014.

¹⁵ For more details see: European Commission (2014c)

Figures 4-9: Regional development in the six bigger EU10 countries (2003-2011)
NUTS2 regions

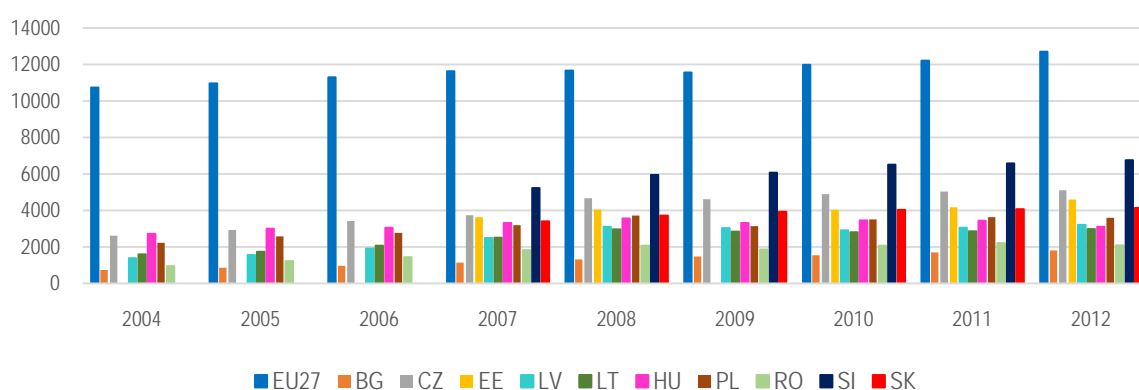


Source: Eurostat

The third indicator is wage convergence. In this respect a lot remains to be done to reach levels comparable to Western European standards. While prices of many commodities and services have become similar in the new member states to those in the old ones, average earnings are still lagging well behind. Figure 10 demonstrates the rather striking gap, while it also indicates a slow catching up in this respect too. Namely, the average income of the EU10 citizens was less than one fifth of EU average in 2004, which actually went up to nearly one third of it by 2012. Within the EU10 the discrepancies are also high: in harmony with national development levels, Slovenia is leading the group with nearly four times the sums earned by Bulgarians. In the middle range can be found the Czech Republic, Estonia and Slovakia, followed by Poland, Hungary, the other two Baltic states and Romania.

Figure 10: Net annual earnings

euro



Source: Eurostat (data missing for Estonia in 2004-06 and 2009, for Slovenia and Slovakia in 2004-06)

Trends of growth and competitiveness

The early 2000s could be characterised by high growth rates in the Central and Eastern European region, and the accession to the European Union just reinforced them in most of the EU10 countries (Figure 11). From the eight countries that joined in 2004, only Hungary took a sharp downward trend while – after some slowing in 2005 – Poland and Slovenia continued to enjoy dynamic growth, similarly to all the other newcomers. In Hungary this failure was due to internal factors (the mismanagement of public finances and the lack of a coherent economic policy) while the European and global environment continued to be a favourable one. According to Eurostat data series,¹⁶ growth in the EU10 in the first years of membership was driven by all three components of it: consumption, investments and exports; even if to different extents in each country.

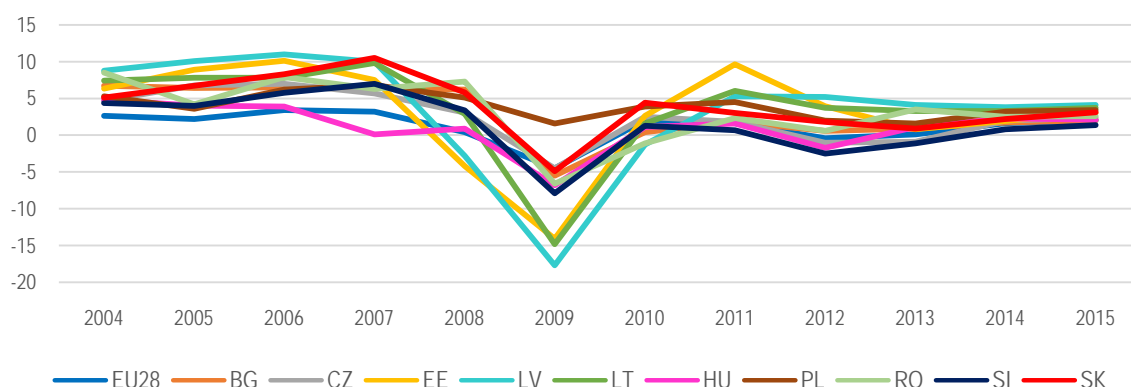
The region was severely hit by the financial and economic crisis, with very different recession rates however. While after overheated growth rates, the Baltic states suffered from a dramatic, double-digit shrinkage of their economies in 2009,¹⁷ the others were between -7.9% (Slovenia) and -4.5% (Czech Republic). The only country to avoid negative growth was Poland, thanks to its robust internal market and lower exposure to external effects.

¹⁶ Eurostat: http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/main_tables

¹⁷ About the specificities of the Baltic developments in the past ten years see: Meisel (2014).

Getting out of the crisis and resuming economic growth has been happening at a different pace across the region. At the same time, Figure 11 shows a steady convergence of growth rates for 2014-2015, with an unprecedented narrowing of the gaps among the members of the EU10. In general, economic expansion is mainly due to exports, while sluggish investments are boosted by accelerated absorption of EU funds. At the same time, private consumption recovers only slowly in most of the EU10.¹⁸

Figure 11: Real GDP growth rate
percent



Source: Eurostat

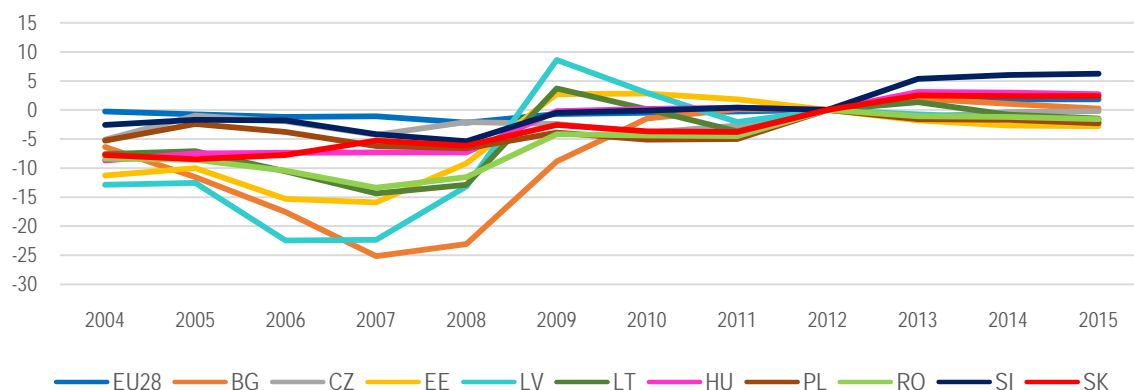
The trends of the current account balances demonstrate well the economic performance and external competitiveness of the EU10 countries. Figure 12 clearly shows a split of the EU10 into two groups between accession and the crisis: the better performer four Visegrad countries and Slovenia on the one hand, and Estonia, Latvia, Lithuania, Romania and Bulgaria (accumulating huge deficits) on the other. While the former group benefited from better economic structures coupled with higher added value of their exports,¹⁹ the latter group suffered from structural weaknesses and a greater import dependency to satisfy consumption.

The crisis, however, put an end to those sharp differences as – thanks to shrinking domestic demand – imports of goods and services fell considerably across the region, resulting even in current account surpluses or just small deficits. According to the figures for the past few years, the EU10 countries seem to have more harmonious and well manageable current account positions than ever before since 2004. It remains to be seen however, whether these favourable trends will remain in place in the post-crisis period. Namely, the challenge is not only the potentially strengthening demand for imports, coupled with the lack of dynamism on the EU10's traditional export markets, but also – as a side effect of economic recovery – the increased profit repatriation of foreign companies (which is usually the biggest in Poland and the Czech Republic).

¹⁸ Eurostat: http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/main_tables

¹⁹ IMF (2014), p. 36.

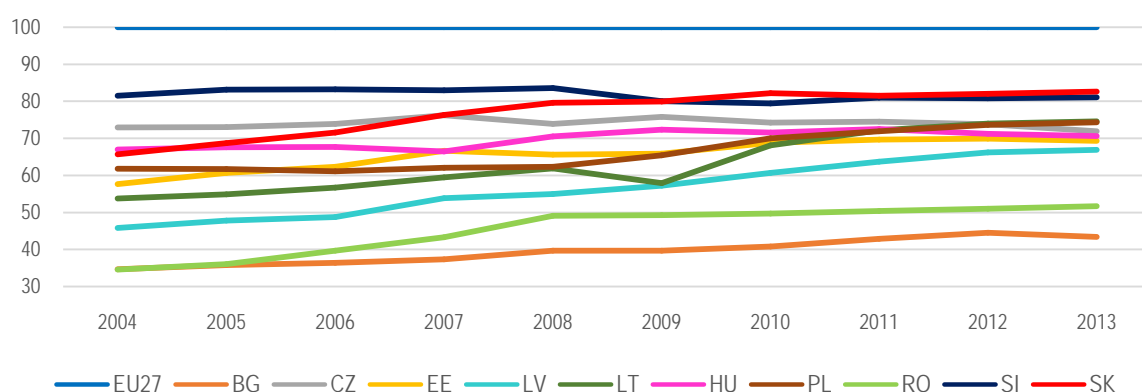
Figure 12: Balance of the current account
percent of GDP



Source: Eurostat

Another important indicator of competitiveness is labour productivity (see Figure 13). In this respect, the performance of the EU10 countries reflects their development levels and trends.

Figure 13: Labour productivity per person employed
EU27=100



Source: Eurostat

While Slovenia and the Czech Republic used to have the highest productivity levels in the first years of membership, in the past few years their performance has been stagnating or even declining respectively. At the same time, the Baltic states exhibited a spectacular catching up of over 20 percentage points between 2004 and 2013 as compared to the EU average. All the other EU10 countries showed a considerable – over 10 percentage points – improvement too, with the exception of Hungary which advanced only modestly. As a result of those developments, the initial gap among the eight countries that joined in 2004 has narrowed significantly, with a clear catching up by them to the EU average (being roughly at around 75% of it in 2013). At the same time, the productivity levels of Romania and Bulgaria are still lagging well behind the rest of the group, hardly reaching half of the EU average.

Finally, from the point of view of competitiveness it is also relevant to evoke the innovation performance of the EU10. The European Commission publishes each year the complex index (composed of 25 indicators) of the EU countries' performances (including among others the gross expenditure on research and development, the contribution to innovation by the enterprise sector, the number of patent applications or that of new doctorate graduates).²⁰ Based on the results the countries can be grouped into four categories. None of the EU10 can be found in the group of the so-called innovation leaders, but the innovation followers already embraced two countries of the EU10 in the past few years, namely Estonia and Slovenia. To the third group of moderate innovators belong the four Visegrad countries and Lithuania, while the fourth category of modest innovators had Latvia as well as the two Balkan countries. Behind the absolute figures, however, it is also important to take into account the pace of development, and in this respect, besides the outstanding improvement of the three Baltic states and Slovenia, the Bulgarian and Hungarian performance can be praised too. Romania, the Czech Republic and Slovakia had just a modest improvement, while Poland reached the lowest growth rate in this field in the past eight years.

Table 2: Innovation index

Country	2006	2007	2008	2009	2010	2011	2012	2013	Growth rate
Bulgaria	0.158	0.168	0.189	0.198	0.232	0.234	0.191	0.188	2.49
Czech Republic	0.374	0.390	0.369	0.374	0.411	0.416	0.405	0.422	1.72
Estonia	0.388	0.382	0.411	0.452	0.453	0.474	0.488	0.502	3.74
Latvia	0.174	0.188	0.195	0.208	0.216	0.228	0.234	0.221	3.51
Lithuania	0.241	0.254	0.233	0.239	0.24	0.260	0.271	0.289	2.58
Hungary	0.298	0.303	0.314	0.315	0.341	0.344	0.335	0.351	2.36
Poland	0.263	0.275	0.265	0.276	0.272	0.282	0.268	0.279	0.88
Romania	0.208	0.219	0.242	0.257	0.240	0.258	0.229	0.237	1.90
Slovenia	0.427	0.431	0.458	0.474	0.481	0.508	0.495	0.513	2.66
Slovakia	0.296	0.302	0.304	0.312	0.299	0.304	0.35	0.328	1.49

Source: European Commission (2014d)

Public finance and monetary trends

Concerning the fiscal position of general governments, it can be established that between 2004 and 2008 most of the EU10 made considerable efforts to consolidate their public budgets and bring the deficit below 3% of GDP (while Estonia and Bulgaria continued to run budget surpluses each year). Only two countries had a deteriorating trend prior to the crisis: Romania which, however, still remained below -3% until 2007, and Hungary. The latter country was (together with Poland in the first few years of membership) under excessive deficit procedure from the outset. Hungary actually accumulated a huge public deficit of over 9% by 2006 (see Table 3), which then had to be rectified just on the eve and then in the middle of the financial and economic crisis. This meant for Hungary a "straightjacket" and, due to an IMF-EU loan package, almost no room of manoeuvre to conduct a loser budgetary policy coupled with increased public debt – as was the case for all other EU10 countries.

²⁰ The European Commission's "Innovation Union Scoreboards" can be retrieved here: http://ec.europa.eu/enterprise/policies/innovation/policy/innovation-scoreboard/index_en.htm

The years of 2008, and especially 2009-2010 have been the worst for the group: a period when only Estonia could avoid the excessive deficit procedure. In parallel with the improvement of the economic situation across the EU10 from 2010 onwards (which was however not linear in any of them) their budgetary positions seemed to follow suit too. Thanks to serious consolidation programmes, in 2013 only Poland and Slovenia had a bigger-than 3% budget deficit: the former having a 4.3% level, while the latter – due to a one-off bank recapitalisation package²¹ – accumulated an unprecedented deficit of nearly 15% of GDP. With these figures eight of the EU10 had a better performance than the Union average of -3.3% public budget position of that year. The years 2014 and 2015 seem to bring about overall public finance stability in the region, in both years only Slovenia breaching the Maastricht limit but with a sharply improving trend.

Table 3: General government deficit/surplus
percent of GDP

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	-2.9	-2.5	-1.5	-0.9	-2.4	-6.9	-6.5	-4.4	-3.9	-3.3	-2.6	-2.5
Bulgaria	1.9	1.0	1.9	1.2	1.7	-4.3	-3.1	-2	-0.8	-1.5	-1.9	-1.8
Czech Republic	-2.8	-3.2	-2.4	-0.7	-2.2	-5.8	-4.7	-3.2	-4.2	-1.5	-1.9	-2.4
Estonia	1.6	1.6	2.5	2.4	-3.0	-2.0	0.2	1.1	-0.2	-0.2	-0.5	-0.6
Latvia	-1.1	-0.4	-0.6	-0.7	-4.4	-9.2	-8.2	-3.5	-1.3	-1.0	-1.0	-1.1
Lithuania	-1.5	-0.5	-0.4	-1.0	-3.3	-9.4	-7.2	-5.5	-3.2	-2.2	-2.1	-1.6
Hungary	-6.5	-7.9	-9.4	-5.1	-3.7	-4.6	-4.3	4.3	-2.1	-2.2	-2.9	-2.8
Poland	-5.4	-4.1	-3.6	-1.9	-3.7	-7.5	-7.8	-5.1	-3.9	-4.3	5.7	-2.9
Romania	-1.2	-1.2	-2.2	-2.9	-5.7	-9.0	-6.8	-5.5	-3.0	-2.3	-2.2	-1.9
Slovenia	-2.3	-1.5	-1.4	0.0	-1.9	-6.3	-5.9	-6.4	-4.0	-14.7	-4.3	-3.1
Slovakia	-2.4	-2.8	-3.2	-1.8	-2.1	-8.0	-7.5	-4.8	-4.5	-2.8	-2.9	-2.8

Source: Eurostat (forecast for 2014, 2015)

Analysing the national measures taken to restore public finance stability, we can find – on the basis of the EU10 governments' Stability/Convergence Programmes between 2011 and 2014²² – a range of similar steps on both the revenue and expenditure side. Starting with the revenue side, among the most typical measures were rising VAT rates coupled with the abolishment of some types of VAT deductibility. Secondly, there was a significant increase of excise duties in all of the EU10. A third common element in the region has been the fight against tax evasion and fraud, combating the grey economy and improving the efficiency of tax collection. On the expenditure side, the most typical measures included a freeze and/or cuts of public sector wages (the Romanian case being the severest with a 25% reduction) coupled with downsizing (or hiring freeze) and reduced government consumption. Many governments have also revised the national system of pensions and social transfers too. In the field of pensions the general trend has been to gradually increase the retirement age (also linked to demography and longer life expectancy) together with thorough revisions and restrictions of early retirement schemes. Pension indexation freeze took place in some countries too, but only temporarily, for the worst years of the crisis. In one

²¹ The biggest part of the banking sector's recapitalisation was done in 2013, exceeding 10% of GDP in that year, while the operation stretched over to 2014 with a remaining nearly 1%/GDP. Stability Programme of Slovenia, 2014 http://ec.europa.eu/europe2020/pdf/csr2014/sp2014_slovenia_en.pdf, p. 21.

²² Those documents can be retrieved here: http://ec.europa.eu/economy_finance/economic_governance/sgp/convergence/index_en.htm

way or another, social benefit cuts (including unemployment benefit revision, sickness or family-related allowances) were also undertaken in the region. At the same time, the differences must be highlighted too, as they reflect some country-specific approaches and solutions to the problems. In a simplified way Table 4 summarises the most important measures that were taken by the individual governments in the past five years including the conventional/similar and the non-conventional/dissimilar steps.

Table 4: Main anti-crisis fiscal measures in the EU10 (2011-2014)

Revenue side	BG	CZ	EE	LV	LT	HU	PL	RO	SI	SK
VAT hike (or at least revised deductibility)		●				●	●	●	●	●
Excise duty hike	●	●	●	●	●	●	●	●	●	●
Combating tax-evasion/improving tax collection	●	●	●	●	●	●	●	●	●	●
Increase in social security contributions	●					●				●
New energy-related fee	●	●							●	●
Broadened base for personal income tax										●
Crisis personal income tax									●	
Rising corporate income tax										●
New or higher real estate type tax		●		●	●			●	●	
Special measures on lottery or gambling		●		●					●	
Full/partial elimination of the private pension pillar ²³						●	●			●
Bank levy and/or financial transaction duty						●			●	●
Sale of carbon emission rights			●	●	●					●
Sale of frequencies						●				●
Sale of emergency oil stocks										●
Privatisation							●			
Special sectoral taxes						●	●		●	●

Expenditure side	BG	CZ	EE	LV	LT	HU	PL	RO	SI	SK
Freeze/cuts in public sector wages	●	●	●	●	●	●	●	●	●	●
Freeze/cuts in social benefits		●		●	●	●		●	●	
Freezing/lower indexation of pensions	●	●		●	●				●	
Increasing of retirement age	●	●	●	●	●	●	●	●	●	●
Cuts in government consumption	●	●	●	●	●	●	●	●	●	●
Cuts in government investment		●			●		●	●	●	●
Cuts in subsidies to public companies/agriculture				●			●	●		●
Debt assumption of local governments						●				
Recapitalisation of banks									●	
Capital injection into a development bank						●				
Wage increase in some public services						●	●			●

Source: Stability/Convergence Programmes of EU10, 2011-2014

When looking at the public debt figures of the EU10 (Table 5) it is obvious that they all entered the Union with levels below the Maastricht threshold. In fact, up until the crisis the only problematic new member state in this

²³ Several EU10 countries introduced the mandatory private pension pillar. Of them Poland and Slovakia decided to eliminate it partially, while Hungary opted for its full abolishment, and – based on a decision in autumn 2014 – the Czech Republic will do the same by 2016.

respect has been Hungary where indebtedness took an alarming trend after accession, in parallel with the accumulation of an unprecedented public deficit by 2006. The other country with a growing and the second highest debt was Poland, which despite the crisis, never reached the 60% limit. The remaining eight new members had really low and well manageable debt levels in EU comparison (e.g. below 30% of GDP in all of them in 2008). The reasons for those positive results were partly historic (e.g. the Baltic states did not inherit any debts from soviet times, or Romania not taking up any during the communist era) and partly reflected lasting prudential fiscal policies (e.g. again Estonia or also Bulgaria running budgetary surpluses).

The crisis however had a devastating impact on the gross debts of many EU10 governments. The debt-to-GDP ratio rose between 2008 and 2014 by about 10 percentage points in Bulgaria, 15 in the Czech Republic, 20 in Latvia, more than 25 in Lithuania and Romania, nearly 30 in Slovakia and nearly 60 (!) in the case of Slovenia (see Table 5). Even though these trends are disquieting, the EU10 group still remains well below the EU average under this indicator; with only Hungary and Slovenia having a ca. 80% level, which in the former is expected to decline again from 2015, while in the latter from 2016 onwards.²⁴

Table 5: General government gross debt
percent of GDP

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	62.1	62.6	61.4	58.8	62	74.4	79.9	82.4	85.2	88.9	89.5	89.2
Bulgaria	37.0	27.5	21.6	17.2	13.7	14.6	16.2	16.3	18.4	18.9	23.1	22.7
Czech Republic	28.9	28.4	28.3	27.9	28.7	34.6	38.4	41.4	46.2	46.0	44.4	45.8
Estonia	5.0	4.6	4.4	3.7	4.5	7.1	6.7	6.1	9.8	10.0	9.8	9.6
Latvia	15.0	12.5	10.7	9.0	19.8	36.9	44.5	42.0	40.8	38.1	39.5	33.4
Lithuania	19.3	18.3	17.9	16.8	15.5	29.3	37.8	38.3	40.5	39.4	41.8	41.4
Hungary	59.5	61.7	65.9	67.0	73.0	79.8	82.2	82.1	79.8	79.2	80.3	79.5
Poland	45.7	47.1	47.7	45.0	47.1	50.9	54.9	56.2	55.6	57	49.2	50.0
Romania	18.7	15.8	12.4	12.8	13.4	23.6	30.5	34.7	38.0	38.4	39.9	40.1
Slovenia	27.3	26.7	26.4	23.1	22.0	35.2	38.7	47.1	54.4	71.7	80.4	81.3
Slovakia	41.5	34.2	30.5	29.6	27.9	35.6	41.0	43.6	52.7	55.4	56.3	57.8

Source: Eurostat (forecast for 2014, 2015)

In line with the new rules on sound public finances, and especially the Fiscal Compact²⁵ – to which nine of the EU10 are signatory parties²⁶ – budgetary stability and fight against public debts gradually become part of the national legal framework too.

Public indebtedness can be linked to at least two risk factors. The share of foreign currency denominated debt in total debt²⁷ is the highest in Lithuania (80%), followed by Bulgaria (70%), Romania (55%), Hungary (40%), Poland (30%), and the Czech Republic (20%). This problem is minimal in Slovakia and practically non-existent in

²⁴ Stability Programme of Slovenia, 2014: http://ec.europa.eu/europe2020/pdf/csr2014/sp2014_slovenia_en.pdf

²⁵ Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG) – an intergovernmental treaty focusing on the balanced budget rule with a maximum 0.5% structural deficit, on the systematic cutting back of public debts and on the introduction of the debt brake rule into national constitutions (or high level laws).

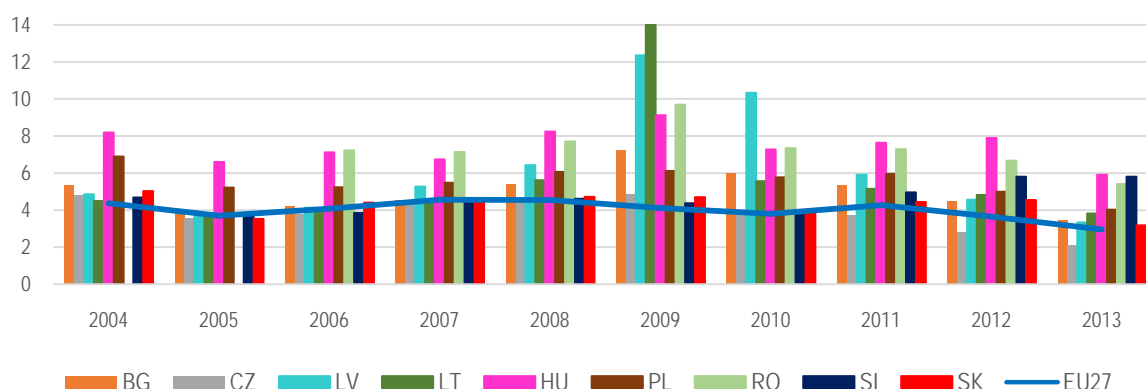
²⁶ In spring 2014, the new Czech government also expressed its willingness to join soon, but the parliament did not endorse it yet by October 2014.

²⁷ Eurostat:

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/File:Central_government_gross_debt_by_currency_of_issuance,_2013.png

Slovenia, Estonia and Latvia. It must also be added, that from these six countries only those four are exposed to exchange rate volatility which – having most of their debts in euros – are not acceding to the eurozone (like Lithuania in 2015) or do not have a fixed exchange rate system (like Bulgaria having the currency board system). Thus, devaluation and a mechanic increase of debt payments is a threat in a diminishing order in Romania, Hungary, Poland and the Czech Republic.

Figure 14: EMU interest rates
percent



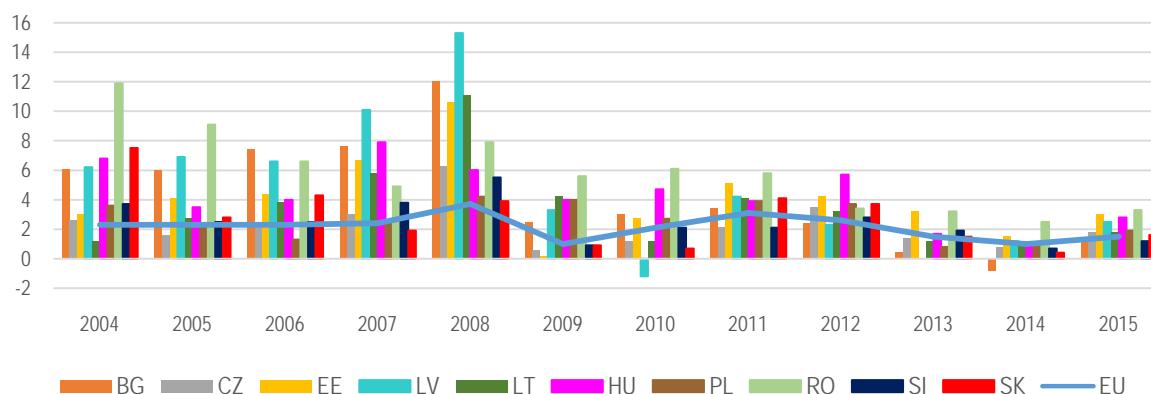
Source: Eurostat (no data for Estonia, missing data for Romania in 2004-05)

Besides the exchange rate uncertainties another burden on governments' debt service is the price of borrowing. The EU10 are overwhelmingly reliant on government bonds and securities (with the exception of Estonia and also Latvia where loans are predominant or at least above 50% respectively).²⁸ In this respect, an important indicator is the rate of the 10-year maturity bonds, whose convergence to the average of the lowest-inflation countries is one of the pre-conditions for joining the euro area. As Figure 14 shows, prior to the crisis, most of the EU10 countries have been close to the roughly 4% of EU average, with the exception of Romania and Hungary which used to have much higher rates. The crisis had an extremely negative impact on the interest levels of those non-eurozone countries which suffered the deepest economic recession in 2009, namely Latvia, Lithuania, Hungary, Romania and Bulgaria. In the following years however a gradual convergence back to lower levels has been taking place (but Hungary, Romania and recently also Slovenia are still leading the group being at the double of the EU average in 2013).

Interest rates are of course closely linked to money supply and price developments in general. As Figure 15 clearly demonstrates, the EU10 countries could be characterised as a high-inflation region between 2004 and the crisis, mainly due to their dynamic – in many cases overheated – post-accession growth rates. As one of the few benign effects of the crisis (shrinking demand) however, the harmonised indices of consumer prices have been declining and are forecasted to remain at around 2% in 2015 for the whole group.

²⁸ Eurostat: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Structure_of_government_debt

Figure 15: HICP inflation rate
percent



Source: Eurostat (forecast for 2014, 2015)

Conclusions

After a long pre-accession process marked by systematic alignment of national law to EU law, the EU10 countries showed a relatively smooth legal adaptation process as full member states. Their record of transposition of EU directives, as well as the number of their infringement cases is in general in line with the EU average. These countries also managed to integrate quickly and without major problems into the institutional system of the EU, and – after a longer learning period – their capacities for using EU assistance has also been improving.

Regarding catching up, a gradual convergence in terms of per capita GDP can be detected. As a result of differing performances, the gap among the EU10 narrowed by 2013 compared to 2004 and the whole group got somewhat closer to the EU average too. The picture is more heterogeneous in terms of regional convergence which has been slower in most of the EU10 in the first five or eight years of membership (with an overwhelming majority of NUTS2 regions still remaining in the category of less developed areas). Finally, concerning the still low level of wages, a gradual catching up process has been unfolding across the EU10 since accession.

The post-accession and pre-crisis years of most of the EU10 countries were characterised by very dynamic economic development, although the gaps among their growth rates were considerable. The crisis hit the region very severely, followed by a gradual recovery, again at different paces. At the same time, the figures for 2014 and 2015 indicate more harmonious growth rates than ever before. The Central and Eastern European region seems to become again the most dynamic one in the EU, but this time more balanced development paths can be expected accompanied by a gradual improvement of competitiveness.

On the basis of the described Maastricht-related performance of the EU10, important conclusions on their euro-maturity can also be drawn. In fact, four countries have already joined the euro area and by 2015 there will be five of them. In a chronological order these are: Slovenia (2007), Slovakia (2009), Estonia (2011), Latvia (2014) and Lithuania (2015). Those countries are the smaller ones in the region with either a high initial development level (Slovenia) or a very dynamic catching up process since EU membership. In the post-crisis period (since 2012) the three Baltic states and also Slovakia performed well against the Maastricht criteria while Slovenia seemed to be the most problematic country suffering from a prolonged recovery and belated structural reforms.

Regarding the other five bigger countries from the group, currently none of them has an official target date for euro entry. In terms of nominal convergence, however, Bulgaria could easily be the next candidate as it complies with all the criteria, with the exception of formal ERM2 membership. Nevertheless, the latter should in no way be an obstacle for the leva which is kept uninterruptedly (without any de- or revaluation) in a currency board ever since 1997.²⁹In terms of public finances, the remaining four countries have somewhat different figures and trends but their data are generally good, remaining under the Maastricht benchmark for both public deficit and debt (with the sole exception of the Hungarian debt figure). Inflation is at well manageable levels in all of them, coupled with gradual interest rate convergence (with low or declining base rates³⁰). Finally, none of them joined the ERM2 system yet, which allows them to conduct a more flexible exchange rate policy, with all the advantages and disadvantages of it.

In any case, due to their close economic ties (especially among the immediate neighbours) it would be desirable for Poland, the Czech Republic, Hungary, Romania and Bulgaria to harmonise their accession to the eurozone. At the same time, beyond nominal convergence the requirement of a tangible real convergence is coming up on the political agenda; with good reason in most of them. While this process will last longer, the unfolding balanced and low-inflationary growth perspectives accompanied by improving competitiveness and sustained public finance stability across the region may facilitate a steadier real convergence leading up to the introduction of the single currency by the outsider countries too.

²⁹ First pegged to the German mark, later to the euro.

³⁰ http://ec.europa.eu/competition/state_aid/legislation/reference_rates.html

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Monetary and financial integration in EU10 countries

Norbert Szijártó

Introductory remarks

This study analyses two different but interconnected aspects of late transition process in EU10 countries. With the collapse of the Council for Mutual Economical Assistance (CMEA), former satellite states in Central and Eastern Europe immediately swapped economic and political relations from the mouldering Soviet Union to the Germany leaded West. Convergence lies in the heart of EU policies, the developments in the functioning of monetary policies in EU10 countries can also be understood as an institutional catching up process. Efficient functioning of the financial markets plays a vital role in the integration process but financial markets in transition countries have been severely constrained by the lack of knowledge about cross-country risk-sharing and institutional deficiencies and lack of acquaintance of financial instruments. Moreover, the absence of adequate government support and regulatory back-up can also hinder the growth of fundamental financial market institutions.

Monetary policy in EU10 countries

After the regime change monetary policy has played an important role in the EU10 countries with inevitable policy and institutional changes, including the construction of independent central banks. Centrally planned economies often used substantial price distortions that were an established custom among CMEA members before. Regarding the monetary system of EU10 countries an essential question emerged whether to use monetary aggregates of fixed exchange rates as the basis for monetary policy and especially for stabilization. In several countries the technical assistance of the IMF was used to adopt and revise central bank laws because on the one hand central bank autonomy and accountability required strong legislation, and on the other hand establishing the credibility of monetary policy was a crucial issue. According to the IMF (2014) report the choice of the nominal anchor played a vital role in determining stabilization paths. The commitment to introduce fixed exchange rates was obvious and technically easy to implement. The exchange rate peg was able to break down hyperinflationary spirals and helped implementing fiscal adjustments and it was also useful when countries faced vulnerable external positions. The alternative could have been money-based stabilization; a monetary aggregate target could have also helped maintaining decreasing inflationary paths. Furthermore, given the flexible exchange rates, money-based approaches are better solutions than flexible exchange rates to absorb external and real shocks.

Exchange rate regimes in EU10 countries

From a theoretical point of view several factors can determine exchange rate regime choices. Markiewicz (2006) differentiates three main approaches: the traditional approach is based on the optimum currency area theory and its extension, the concept of the "impossible trinity" (see later). The second one is the currency crisis approach, and finally – as a third option - the choice of exchange rate regimes can be analysed through a political economy view. The optimum currency area theory pioneered by Mundell's, Kenen's and McKinnon's work compares the fixed and flexible exchange rates in terms of trade and welfare gains, and states that fixed exchange rates are

more suitable for countries characterized by high degree of trade openness because of increasing trade gains. Moreover, geographical proximity usually determines a country's trade relations and therefore favours pegging its currency to the largest trading partner. The impossible trinity holds that it is impossible to have all three of the following at the same time – fixed exchange rate, free capital movement and independent monetary policy. Since free capital movement can be considered as a given option due to growing importance of capital movement among countries at global and especially at regional level, furthermore the European Union's notion of four freedoms is committed to diminish constraints on intra-European capital movements, for the EU10 countries only two policy combination options remained. First, fixed exchange rates and the loss of conducting independent monetary policy, second, flexible exchange rates and independent monetary policy.

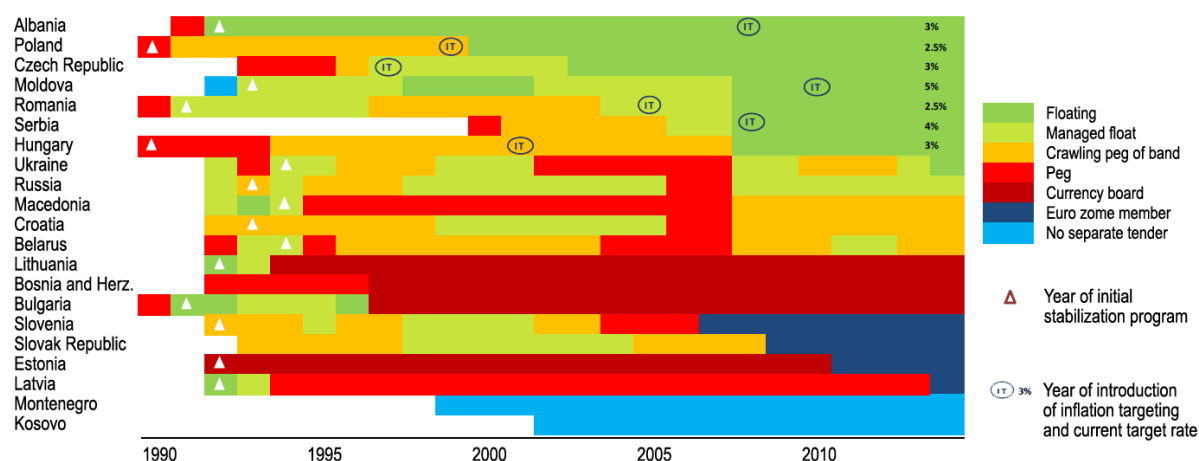
The importance of the second, currency crisis approach appears when a country applies fixed exchange rates with chronic balance of payments deficits. The vital question in this situation is whether a country's central bank owns enough foreign exchange reserves to maintain the fixed exchange rate regime. Krugman (1979) emphasized that currency crises – first generation currency crises – are the consequence of weak economic fundamentals, in a fixed exchange rate regime monetary expansion or fiscal expansion leads to a persistent loss of international reserves, and to a speculative attack on the currency, and finally to the abandonment of the fixed exchange rate. Schardax (2002) analysed the exchange rate crises of the 1990s in Central European countries and concluded that Krugman's theorem of first generation currency crises described properly the developments in these countries. According to second generation models of currency crises, expectations – sometimes of self-fulfilling kind – of monetary policy or economic policy can lead to currency crisis. For instance, increase in the public deficit, public gross debt and other deteriorating economic variables are able to negatively influence investors. In this way sovereign default risks start rising and on the one hand investors withdraw capital from the country, on the other hand speculative attacks will try to enforce abandoning the parity. Finally, the country chooses flexible exchange rates. EU10 countries aimed to join the euro area, so at the same time they had to comply with the convergence criteria, one of which implies participation in the exchange-rate mechanism (ERM II) for two consecutive years. This means that applicant countries should not devalue the currency for two years, and cope with temporary speculative attacks on their currencies.

The mentioned third approach takes a political economy view into account: the credibility gains associated with fixed exchange rate regimes. Imported price stability as a consequence of the peg seemed to be a useful instrument to convince domestic citizens of the economic successes. Thus weak governments may choose to use fixed exchange rates to eliminate pressures.

Regarding the credible exchange rate system, Farkas (2010) points out that there were only two alternatives, hard peg and the import of low-level inflation rate, or flexible exchange rate. Therefore mixed exchange rate regimes were ruled out. Initially, several countries such as Bulgaria, Czech Republic, Estonia, Hungary, Poland and Romania introduced fixed exchange rate regimes, choosing an external anchor to break down high inflation rates. Latvia and Lithuania at an early stage used flexible exchange rates. However, Slovakia and Slovenia opted for a mixed exchange rate regime – crawling peg or band. Estonia successfully applied a fixed regime, namely the currency board which is a credible monetary authority where the governments cannot print money, the currency board can only earn interest on foreign reserves, and the central bank does not act as a lender of last resort. In sight of the currency board in Estonia, Lithuania also changed its exchange rate regime from floating to currency board, and the third Baltic state, Latvia introduced a peg. Bulgaria had sustained the fixed regime for a year then tried to apply flexible regimes – float and managed float – but in 1997 introduced a currency board (see Figure 1). At the end of the 1990s and the beginning of the 2000s several larger Central European states moved

to flexible exchange rates from fixed ones through mixed regimes: the Czech Republic started floating in 1996, Poland in 1998, Romania in 2003, and finally, Hungary in 2008. In 2008, Slovenia, joined the Eurozone, and delegated the conduct of monetary policy to the community level. Following Slovenia, Slovakia, Estonia and Latvia also joined the euro system, and the accession of Lithuania will take place in January 2015.

Figure 1: Exchange rate regimes in transition countries



Source: 25 Years of transition (IMF)

Nominal and real exchange rate in EU10 countries

Before analysing exchange rate regimes it is useful to clear certain definitions first. By definition the nominal exchange rate is the number of units of the domestic currency that can purchase a unit of a given foreign currency. A decrease in this variable is called nominal appreciation of the currency. Under a fixed exchange rate regime, a downward adjustment of the nominal exchange rate is a revaluation. An increase in this variable is the nominal depreciation of the currency. And under a fixed exchange rate regime, an upward adjustment of the nominal exchange rate is called devaluation.³¹

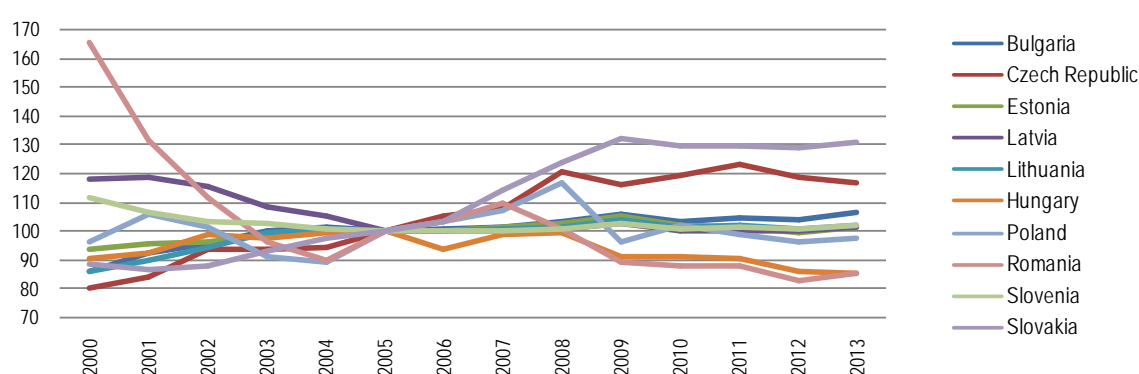
Concerning the nominal exchange rate movements in EU10 countries, we can see a really mixed picture. First, among the euro area members we cannot define similar trends in nominal exchange rates, more or less as a consequence of pursuing different monetary and economic policies regarding entering the euro zone. The essential question here is whether to enter the euro area in an undervalued or overvalued exchange rate. Both of them are associated with advantages and disadvantages. An overvalued exchange rate can be useful to raise the purchasing power of real wages but it may worsen the competitiveness of traded goods and reduce the export and GDP growth, therefore it has substantial negative effects on real convergence process. An undervalued exchange rate obviously eases the purchasing power of real wages, thus inflationary forces come into operation. But joining the euro area in an undervalued exchange rate has a positive effect on the competitiveness of exported goods, which is especially important in a small open economy so the gains from growing trade balance surpluses may raise the output and the process of convergence accelerates.

³¹ Source: Czech National Bank, https://www.cnb.cz/en/faq/what_is_the_nominal_and_real_exchange_rate.html

Looking at the nominal exchange rate developments of EU10 countries, we can identify undervalued and overvalued nominal exchange rates. By the year 2015, all of the Baltic countries will be members of the euro area, but they have had different nominal exchange rate developments since 2000. Estonia has had a constant nominal exchange rate, Latvia had a nominal depreciation in early 2000s and Lithuania had a nominal appreciation till 2003. After the middle of the 2000s, both Latvia and Lithuania have had a flat nominal exchange rate, that did not altered during the global financial crisis. The Baltic countries pursued a more or less optimal monetary policy regarding entering the eurozone, that was a consequence of the strictly pegged exchange rate – currency board. The post-Yugoslavian country, Slovenia joined the eurozone first in 2007, due to its relative high degree of development. In Slovenia we can identify a relative appreciation of the nominal exchange rate lasting until 2004, and after that the nominal exchange rate was almost unchanged. Between 2000 and 2009, there was a steady appreciation of the currency in Slovakia and before joining the euro area the appreciation accelerated because the Slovak Government was interested in entering the eurozone at a highly overvalued nominal exchange rate. Since then, the Slovak nominal exchange rate has been constant, thus the purchasing power of the wages is still highly overvalued comparing the regional competitors. (Slovak residents usually do shopping in neighbouring countries such as in Hungary). The remaining five countries which are not participating in the euro area show us a mixed picture. Hungary and Romania have been applying a firmly undervalued currency in order to maximise benefits from net exports. The depreciation of the nominal exchange rate in Hungary started in 2007 after a moderate appreciation (see Figure 2). In Romania, there was an enormous devaluation of the currency during the early 2000s until 2004, which was succeeded by a mild appreciation due to the introduction of the new currency (new lei) in 2005. In 2007 the nominal exchange rate started again depreciating. Bulgaria and Poland have had a constant nominal exchange rate with small deviations as a consequence of the global financial crises. Finally, in the Czech Republic we can see a continuous appreciation of the currency till 2007, since then the nominal exchange rate is constant but significantly overvalued.

Figure 2: Nominal exchange rates in EU10 countries

37 trading partners, 2005 = 100



Source: Eurostat

The real exchange rate is defined as the ratio of the price level abroad and the domestic price level, where the foreign price level is converted into domestic currency units via the current nominal exchange rate. An increase in real exchange rate is called appreciation of the real exchange rate, a decrease is called depreciation. The real

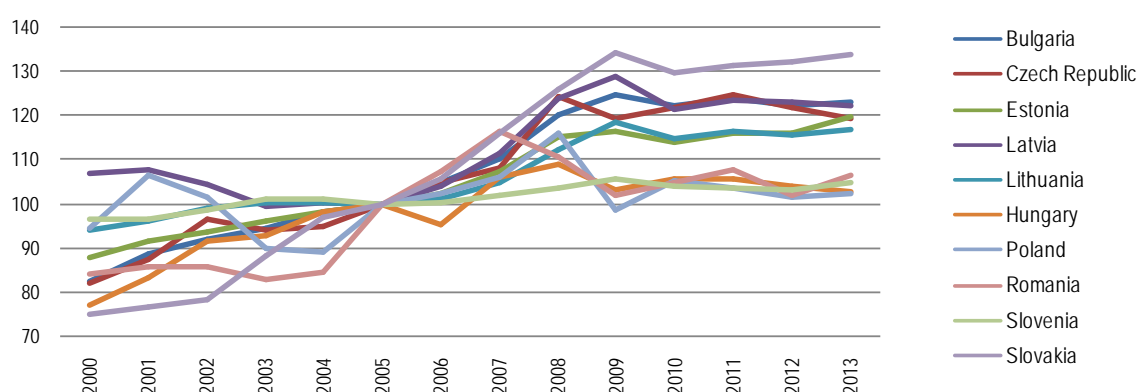
rate tells us how many times more goods and services can be purchased abroad (after conversion into a foreign currency) than in the domestic market for a given amount. In practice, changes of the real exchange rate rather than its absolute level are important. In contrast to the nominal exchange rate, the real exchange rate is always floating, since even in the regime of a fixed nominal exchange rate, real exchange rate can move via price-level changes. Real Effective Exchange Rate (REER) is a measure of the trade-weighted average exchange rate of a currency against a basket of currencies after adjusting for inflation differentials with regard to the countries concerned and expressed as an index number relative to a base year.³²

Academics usually analyse two different kind of real exchange rate. The first one is the consumer price index based real exchange rate, and the second one is the unit labour cost based real exchange rate. The former is computed as a weighted average of bilateral exchange rates vis-à-vis key trading partners' currencies, adjusted for relative inflation differentials, the latter is adjusted for relative unit labour costs. Both variables can be used as a competitiveness indicator and as an indicator to define real effective exchange rate appreciation or depreciation.

The consumer price indices based real effective exchange rates of EU10 countries show overvaluation in each country but to varying degrees (see Figure 3). Hungary, Poland, Romania and Slovenia have had a slightly overvalued trend in the consumer price indices based real effective exchange rates since the global financial crisis. The remaining EU10 countries except for Slovakia have had a moderate overvaluation that started during the global financial crisis. The consumer price indices based real effective exchange rate in Slovakia went through a long lasted appreciation trend till 2009, when the country joined the euro area, and after that there were no deviations from the constant level.

Figure 3: Real effective exchange rates of EU10 countries

deflator: consumer price indices – 37 trading partners, 2005 = 100



Source: Eurostat

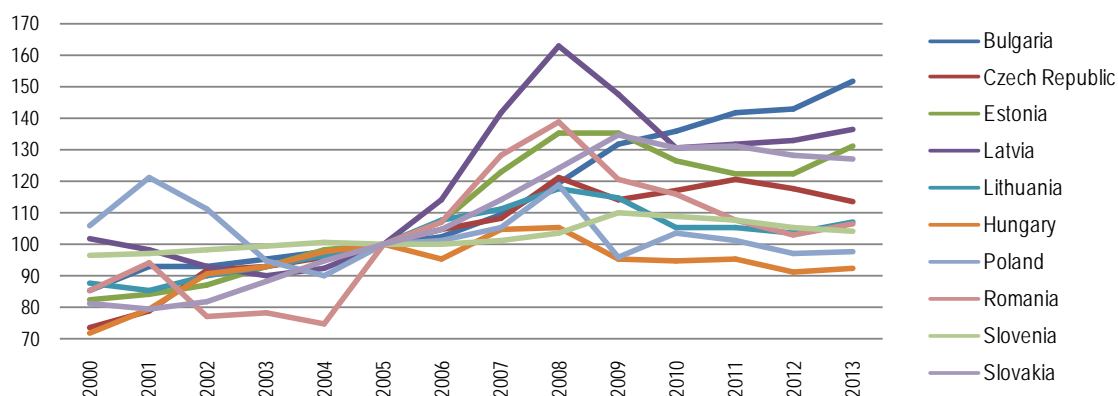
The unit labour costs based real effective exchange rates of EU10 countries depict a robust overvaluation in almost each EU10 countries with the exception of Hungary and Poland. In several countries the convergence

³² REER is also defined as the average of the bilateral Real Exchange Rates (RER) between the country and each of its trading partners, weighted by the respective trade shares of each partner. Being an average, the REER of a country can be said to be in equilibrium if it is found overvalued in relation to one or more trading partners whilst also being undervalued to the others.

process took place in an economically unhealthy manner, thus unit labour cost (wages) have been increasing in a faster pace than the output (GDP). Therefore the productivity and competitiveness of these countries have deteriorated significantly since they joined the European Union. Hungary and Poland have undervalued currency in terms of unit labour costs based real effective exchange rate that is why both of them are more competitive than the other EU10 countries.

Figure 4: Real effective exchange rates of EU10 countries

deflator: unit labour costs in the total economy – 37 trading partners, 2005 = 100



Source: Eurostat

As a consequence of the global financial crisis unit labour costs based real effective exchange rates in Baltic states, Slovenia, Slovakia, and the Czech republic turned to a downward trend (see Figure 4) but this trend was not accompanied by robust internal devaluation which is necessary to restore competitiveness. External devaluation is only possible in countries that apply floating exchange rate regimes, therefore the Baltic states, Slovenia and Slovakia in the euro area and Bulgaria with its currency board cannot achieve higher competitiveness without internal devaluation. The euro is globally overvalued against main currencies but the European Central Bank is reluctant to devalue it safeguarding the peripheral euro zone countries. Bulgaria pegged its domestic currency to the euro thus external devaluation is impossible without abandoning the fixed exchange rate regime.

Inflation and inflation targeting in EU10 countries

After the collapse of the CMEA, most countries faced high or hyperinflation as prices moved to market levels and as governments used monetary financing for rebalancing fiscal deficits. One of the most important tasks was to break down inflation and during the 1990s these countries were successful in controlling inflation dynamics. By the beginnings of the 2000s EU10 countries reached one-digit inflation rates except for Romania where in 2000 a 45.7% inflation rate was registered and inflationary pressure eased only by mid-2000s. The primordial task was to maintain or decrease the formerly reached inflation levels because they had to meet the convergence criterion regarding the inflation rate too. Therefore several countries introduced an inflation targeting framework to anchor inflationary expectations at a low level. Novak (2011) and De Grauwe and Schnabl (2005) also express that the introduction of the inflation targeting in some EU10 countries proved to be a right choice. Five countries

introduced inflation targeting, the first was the Czech Republic in 1997, defining a low-inflationary path, and since 2002 the Czech Republic has been pursuing a relatively low inflation target of 1-3% band. Poland planned to apply inflation targeting also in the 1990s but between 1998 and 2003 there was no defined target rate thus the explicit inflation targeting became effective in 2004 with 2.5% \pm 1 percentage point. Hungary introduced the regime in 2001, but several times it was impossible to keep inflation within the band. (Although the average annual inflation rate was 1.7% in 2013 and the predicted rate for 2014 appears to be zero, the government of the National Bank of Hungary have been reluctant to lower the target inflation). Explicit inflation targeting came to effect in 2005 in Slovakia, however after introducing the euro Slovakia delegated the conduct of monetary policy to community level. And last but not least Romania introduced the regime in 2005 (see Table1).

Table1: Inflation targeting regime in five Central and Eastern European countries

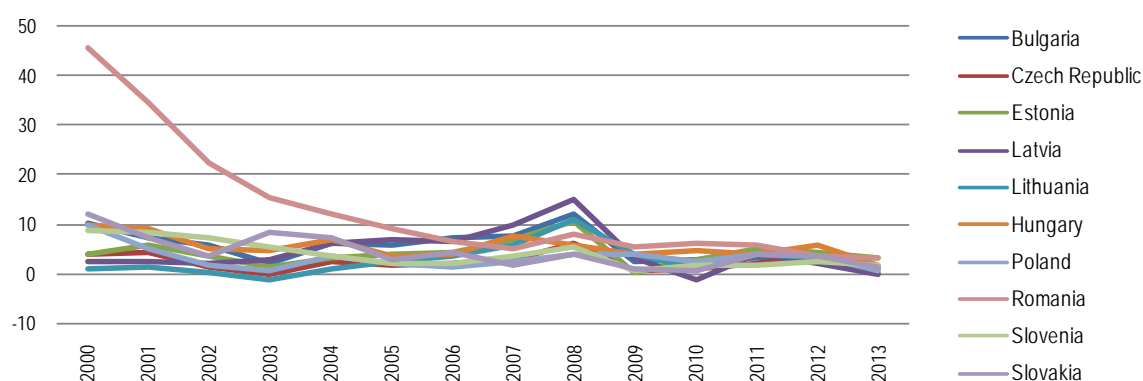
Country	Introduction of the regime	Percentage rate
Czech Republic	1997: introduction of the regime	1998: 5.5-6.5%
		1999: 4-5%
		2000: 3.5-4.5%
		2001: 2-4%
		2002: 1-3%
Hungary	2001: introduction of the regime	2002: 4,5%+/-1
		2003: 3,5% +/-1
		2004: 3,5% +/-1
		2005: 4% +/-1
		2006: 3% +/-1
Poland	1998: introduction of the regime	2004: 2,5% +/- 1%
	1998-2003: reducing the rate of inflation	annual CPI should be as close as
	2003: targeting inflation	possible to 2,5%
Romania	2005: introduction of the regime	2005: 7,5% +/-1
		2006: 5% +/-1
		2007: 4% +/-1
		2008: 3,8% +/-1
		2009: 3,5% +/-1
		2010: 3,5% +/-1
		2011: 3% +/-1
Slovakia	1998-2005: implicit inflation targeting	2005: 3,5% +/-0,5
	2005: explicit inflation targeting	2006: 2,5%
	2009: Economic and Monetary Union membership	2007-2008: 2%

Source: Own compilation, based on national bank data (CNB, MNB, NBP, BNR and NBS)

In 2008, the reaction of EU10 countries to the global financial crisis was a sudden increase in inflation rates except in Hungary where the harmonized indices consumer prices decreased to 6% from 7.9%. Inflation rates ranged from 3.9% in Slovakia to 15.3% in Estonia. The volatility of inflation rates and other economic variables such as the GDP growth rate was the highest in the Baltic countries with a sharp decrease and fast rebound. Inflation rates during the global financial crisis were 10.6%, 15.3% and 11.1% respectively in Estonia, Latvia and

Lithuania. The fourth country with a double-digit annual inflation rate was Bulgaria with a peak value of 12%. The (arithmetic) average inflation rate in the EU10 countries was 8.3% in 2008 and only one year later it dropped to a tolerable level of 2.6%. A mild price acceleration was registered in 2011 and 2012 due to the statistical effects of eurocrisis, and then a deflationary period started in corresponding with the overall European Union movements. In Latvia the inflation rate reached zero, and in other seven countries lower than 2% even though the inflation targets of individual countries are higher. In 2013 the (arithmetic) annual average inflation was only 1.5% in the region (see Figure 5).

Figure 5: Harmonized indices of consumer prices
average rate of change, all items



Source: Eurostat

Financial integration in EU10 countries

In the communist era, financial system did not have an active role; banks financed centrally-planned tasks and projects of state-owned companies. During the transition period to market economy, one of the most important task was to establish a two-tier banking sector in order to allocate capital to productive use. "The creation of central banks, and modern financial systems was an unprecedented challenge, involving building a number of pillars from scratch, to underpin a functioning system. These included prudential regulation, supervision, and an appropriate framework for competition." (IMF, 2014, pp. 41.) All countries adopted a model based on sound bank supervision, but incomplete reforms led to banking crises in all countries; the sequence of crises started in 1990 in Romania, and finished in 1998 in Slovakia. Thus modern banking systems in EU10 countries were created in the early 2000s after a second phase of reforms.

The banking systems of EU10 countries have been turned into one of the most dynamic sectors of the economies due to continuously rising penetration of foreign bank ownership. From 2004, the foreign banks have been holding majority shares in all EU10 countries (Caporale et al., 2009) and according to the IMF (2014) review on transition in Central and Eastern European countries, banking became the sector with the highest private and foreign participation, and as mentioned, foreign bank ownership was comparatively high.

According to Baele et al. (2004) the definition of integrated financial markets is the following: "The market for a given set of financial instruments and/or services is fully integrated if all potential market participants with the same relevant characteristics:

- (1) face a single set of rules when they decide to deal with those financial instruments and/or services;
- (2) have equal access to the above-mentioned set of financial instruments and/or services; and
- (3) are treated equally when they are active in the market (Baele et al. (2004, pp. 6.).

The concept of financial integration or financial market integration goes back to the 1960s, when as part of the optimum currency area theory, Ingram (1962) pointed to the fact that financial integration can reduce the need for exchange rate adjustments regarding a country or a group of countries planning to adopt a single currency or to irrevocably peg their exchange rates. Through capital flows they can prevent temporary or permanent distortions in the economy. The degree of financial integration is of substantial interest to both academics and policymakers because of its implications on financial markets – money, stock and bond – efficiency, risk-sharing and financial institutions. Financial markets are totally integrated when the law of one price holds (Adam et al., 2002).³³ The consequence of the law of one price is that assets generate the same return, regardless of the location of the issuer and of the asset holder. Financial integration is not only the integration of financial markets and services it can take other forms as well. Liebscher et al. (2006) suggest that integration can take many forms and various aspects:

- monetary integration, either through currency unions or through dollarization as well as euroization;
- liberalization of the capital account;
- subcontracting abroad of financial services or infrastructure, such as in the case of listing of securities on foreign stock exchanges;
- foreign entry, and
- regulatory or institutional convergence and harmonization.

The benefits of financial integration

Financial integration is usually associated with financial development and countries with properly functioning financial markets (or banking systems) enjoy positive effects on economic growth. Several empirical studies analysed the relationship between financial development and economic growth concluding that effective banking systems accelerate economic growth. Baele et al. (2004) consider three interrelated benefits of financial integration: more opportunities for risk sharing and risk diversification, better allocation of capital among investment opportunities, and finally, financial development. Financial integration provides an access to a larger market and additional opportunities for firms and households to share financial risk and to smooth consumption with purchasing international assets (stocks and bonds), investing in international funds and so on. Regional (and global) risk-sharing opportunities make it possible to finance risky projects with potentially higher returns and financial integration also allows investors to hedge against negative shocks because financial markets and institutions can tackle risk better. Better allocation of capital materializes by removing all forms of impediments to trade financial assets and flow of capital, thus investors want to and will find the most productive investment opportunities.

³³ The law of one price indicates that "once prices are converted to a common currency, the same good should sell for the same price in different countries" (Rogoff, 1996). Simply put, a good must sell for the same price all locations.

These benefits lead to higher economic growth. Levine (2005) points out that financial institutions and markets can promote economic growth through five different channels:

- 1) easing the exchange of goods and services through the provision of payment services;
- 2) mobilising and pooling savings from a large number of investors;
- 3) acquiring and processing information about enterprises and possible investment projects, thus allocating savings to their most productive use;
- 4) monitoring investment and carrying out corporate governance, and
- 5) diversifying and increasing liquidity and reducing intertemporal risk.

Measuring financial integration

There are no standard measures in the literature for assessing the level of financial integration, various methods exist. Regarding developing countries, Park (1999) stresses that international financial integration may have destabilizing effect on economies with premature financial infrastructure. Park suggests three indicators to measure the degree of international financial integration:

- (1) banks international activities ratio (%) = banks' total foreign assets and liabilities / banks' total assets and liabilities;
- (2) inward foreign direct investment to GDP ratio (%) = annual stock of inward foreign direct investments / GDP;
- (3) private capital flows to GNP ratio (%) = net inward private capital flows / GNP

The first comprehensive study on financial integration was carried out by Adam et al. (2002). They report four categories for indicators of financial integration:

- 1) indicators of credit and bond market integration – for interbank market, bond market, mortgage market and for corporate loan market;
- 2) indicators of stock market integration with alternative indicators of investment fund industry, pension funds and insurance companies;
- 3) indicators of integration based on economic decisions of household and firms, and
- 4) indicators of institutional differences that may induce financial market segmentation.

Regarding these four groups of indicators we can differentiate price-based and quantity-based indicators. From a methodological point of view one can analyse financial market integration in terms of β -convergence and σ -convergence. The former measures the speed of integration of countries to the benchmark value, and the latter measures the deviations from the benchmark value, (if it is possible to address an applicable benchmark value). Lane and Milesi-Ferretti (2003) investigate the growth of foreign asset and liability positions and the rates of return on external assets and liabilities. They apply a volume-based indicator, the stock of aggregate foreign assets and liabilities respectively to the GDP, and an equity based measure, the sum of portfolio assets and

liabilities and FDI assets (and liabilities). Running panel regressions they suggest that external liberalization, trade openness, stock market capitalization and privatization have positive effects on international financial integrations but financial depth in terms of liquid liabilities to GDP, corporate tax rate and insider-trading laws have no significant effects on international financial integration. Returns on external assets and liabilities do not signal common patterns due to unavailability of precise information on cross-border investments.

In the early 2000s, the European Central Bank started to emphasise financial integration due to its growing relevance in the euro zone because financial integration had become a tool of adjustment and risk-sharing mechanism. With the publication of Baele et al. (2004) the European Central Bank started a series of publications in the field of financial integration. They suggest that there are three kinds of measures of financial integrations; price-based measures, news-based measures and quantity-based measure.

Financial integration in EU10 countries

Even though the measurement of financial integration has become increasingly important especially during the global financial crisis that shed light on globally interconnected financial markets, only few studies focused on the transition economies. Baltzer et al. (2008) analyse the financial integration in new European Union member states and they drew five conclusions:

- 1) financial markets in the new European Union member states are less integrated than those in the euro area;
- 2) the process of integration is under way and after the accession to the European Union accelerated;
- 3) money and banking markets are becoming increasingly integrated;
- 4) international financial integration in the bond markets has not yet started;
- 5) equity markets are less integrated.

Caporale et al. (2009) examine the relation between financial development and economic growth of EU10 countries by estimating a dynamic panel model between 1994 and 2007 and they point out that stock and credit markets are still underdeveloped in these countries. Albuлесcu (2011) stresses that financial instability created by the global financial crisis negatively affected the EU10 countries economic and financial integration. Boubarki, Couharde and Guillaumin (2012) assess the degree of financial integration in EU10 countries by testing the Feldstein-Horioka regression. And they conclude that financial integration process of the EU10 countries with euro area is not yet complete. According to the existing measures of financial integration, in this study I carry out analyses on the developments of EU10 financial markets through selective measures namely FDI stock per GDP and the Feldstein-Horioka coefficient³⁴ to determine the degree of financial integration in EU10 countries.

FDI stock per GDP can be a proxy to assess financial integration (Park, 1999, Edison et al. 2002, and Friedrich, Schnabel and Zettelmeyer, 2010). During the last ten years foreign multinational companies invested billions of euros in EU10 countries. In each country the inward FDI stock per GDP exceeds 30 % except for Slovenia where we can identify a decreasing tendency of inward FDI stock since 2010 due to prolonged economic disturbances (see Table 2.). In 2004, Estonia joined the EU with the highest proportion of inward FDI stock in terms of annual

³⁴ Feldstein and Horioka (1980), see definition later.

GDP exceeding 75 %, while Slovenia had the lowest proportion with only 20.1 %. Slovenia, as the most developed former Yugoslavian country, has pursued a completely different kind of economic policy regarding the attraction of foreign capital than some other EU10 economies. In several countries such as in Poland, the Czech Republic or Slovakia, the privatization or brownfield investments was almost the only source of foreign capital in the 1990s, however in Slovenia large number of companies remained in domestic property. In 2004, the average inward FDI stock to GDP was 38.5 % in the region, after ten years we can identify a modest accumulation of foreign capital in EU10 countries, the inward FDI stock per GDP ratio has increased to 57.8 %. In 2004, the top three countries with the highest ratio of inward FDI stock per GDP were Estonia (76%), Hungary (54.3 %) and Slovakia (46.2 %). To the year of 2013 the proportion of foreign investments in Bulgaria has sharply increased to 93.3 %, due to enormous capital inflow in the middle of the 2000s and due to comparatively low GDP level. Estonia (81.2 %) and Hungary (80.2 %) are the following in the rank. From its initial third position, Slovakia lagged behind the top countries with only 58 % of inward FDI stock per GDP.

Table 2: Inward FDI stock in EU10 countries
percent of the GDP

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bulgaria	26.9	35.5	49.9	66.5	80.8	86.9	94.7	96.1	91.3	91.5	93.3
Czech Republic	40.8	43.8	47.0	49.0	55.3	50.5	58.9	61.5	57.0	64.3	62.7
Estonia	63.8	76.0	84.9	71.3	70.1	71.3	82.5	85.0	79.9	83.2	81.2
Hungary	51.1	54.3	57.4	66.9	64.2	58.3	73.5	69.5	65.9	79.5	80.2
Latvia	25.1	28.3	30.3	33.1	33.0	33.3	42.9	45.4	46.3	46.2	49.7
Lithuania	23.9	25.7	33.0	34.8	35.4	28.1	34.2	35.8	35.3	36.3	35.5
Poland	23.9	30.9	30.7	33.3	37.0	30.4	38.6	42.5	39.0	44.2	45.6
Romania	18.3	24.5	27.3	35.1	34.1	34.3	41.5	41.5	41.4	44.2	42.4
Slovakia	41.9	46.2	50.8	56.2	51.8	55.2	57.2	56.0	57.3	58.6	58.0
Slovenia	19.2	20.1	21.0	21.6	27.8	29.8	29.4	30.2	31.8	32.6	29.7
Average	33.5	38.5	43.2	46.8	49.0	47.8	55.3	56.4	54.5	58.1	57.8

Source: The Vienna Institute for International Economics, database

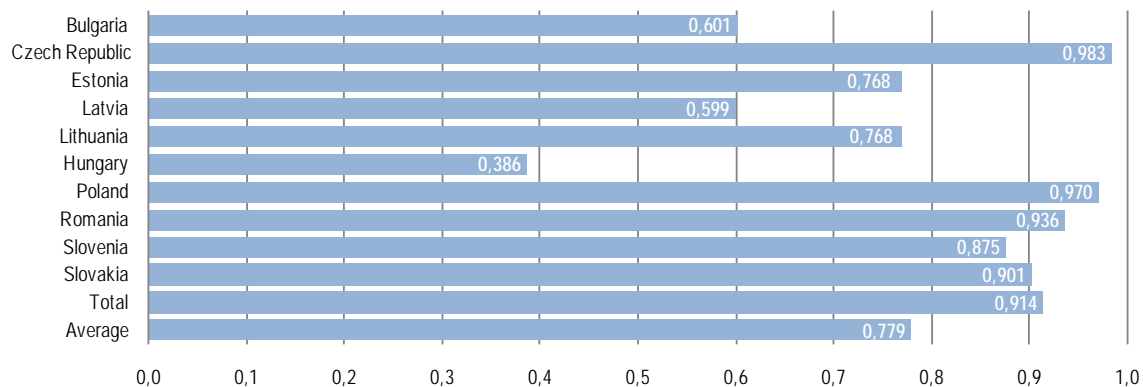
Following Boubarki, Couharde and Guillaumin (2012) a simple method is applied here assessing the degree of financial integration of EU10 countries. To determine Feldstein-Horioka coefficient in Central and Eastern European countries this equation is used:

$$(I/Y) = \alpha + \beta(S/Y),$$

where I/Y denotes the ratio of investments over GDP and S/Y represents the ratio of savings over GDP. According to Feldstein and Horioka (1980), financial markets are perfectly integrated into global or regional capital market, if Feldstein-Horioka coefficient is insignificantly different from zero. In this case domestic investments do not depend on domestic savings, since domestic investments can completely be financed by the global or regional pool of capital. To put in other words the lower the correlation between domestic investments and domestic savings the higher the financial integration. I calculated correlation coefficients between gross domestic investments and gross savings for EU10 countries and the results show that average financial

integration into the global capital market is low in Central and Eastern European countries.³⁵ Data were collected from Eurostat database of national accounts from 2000 to 2003, and gross domestic investments were replaced by gross capital formation due to data availability.³⁶ According to our calculations financial integration is high in Hungary and relatively high in Bulgaria and Latvia but in other cases is substantially low (see Figure 6.).

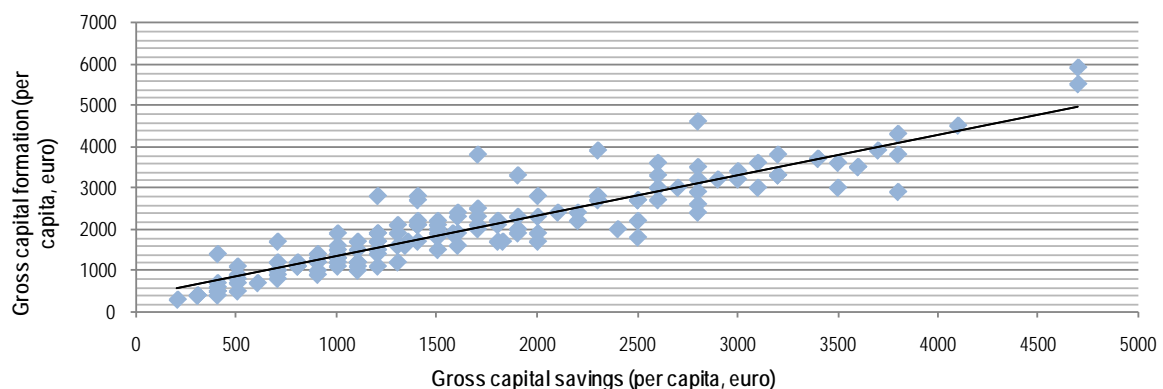
Figure 6: The Feldstein-Horioka coefficient of given EU10 countries correlations



Source: Own compilation, based on Eurostat data

The total correlation of EU10 countries represents the relationship between gross domestic investments and gross savings (see Figure 7.). The correlation coefficient, $R^2=0.8348$ shows strong relationship which means low financial market integration for EU10 countries. The consequence of low financial market integration is to firms and households in EU10 countries do not employ regional and intertemporal risk-sharing.

Figure 7: The Feldstein-Horioka coefficient of the whole dataset*



* $y = 0.972x + 403.2$; $R^2 = 0.834$

Source: Own compilation, based on Eurostat data

³⁵ Average correlation is the simple mean of national correlations.

³⁶ From a methodological point of view there is a little difference between the two measures. Gross capital formation is measured by the total value of gross fixed capital formation changes in inventories and acquisitions less disposals of valuables for unit or sector. Gross domestic investment is the sum of fixed non-residential and residential investments and changes in inventories.

According to our calculations financial integration measured by Feldstein-Horioka coefficients of given EU countries and of the whole dataset illustrates low degree of integration into global financial markets. Even though foreign bank participation in EU10 countries is especially high, there stock and bond markets are less integrated. This can be explained by several factors for instance low financial literacy, lower risk-taking behaviour and saving decisions of households.

Concluding remarks

Between 2004 and 2007, ten Central and Eastern European countries joined the European Union. Since the accession of the EU10 countries, these states have expressed their wish to quickly integrate into the euro area. The enlargement of the eurozone started in 2007 with the accession of Slovenia, and then Slovakia, Estonia and Latvia already belong to the euro area since, respectively, 2009, 2011 and 2014. Lithuania joins the eurozone in 2015. However, by 2008-09 the global financial crisis and 2010-11 the debt crisis in the eurozone caused reluctant interest in joining the euro area regarding the Czech Republic, Hungary and Poland.

In this study, monetary integration analysed by exchange rate regimes, exchange rate policy and inflation convergence that show significant catch-up. By the year of accessing the EU a mixed picture can be seen regarding the exchange rate regimes. The Baltic states and Bulgaria adopted a peg, other countries floating. Smaller countries tend to have fixed exchange rates but the determination of exchange rates does not really explain the success in accessing the euro area even though only smaller countries have achieved this. Exchange rates are usually subject to overall economic goals, the undervalued rate is good for boost gains from export and the overvalued is considered to be fit to enlarge purchasing power of domestic currency. Therefore no common patterns can be found in EU10 countries regarding nominal and real effective exchange rates. Due to the global financial crisis inflation rates are close to zero in all EU10 countries.

The second part of this study deals with financial integration in the region. On the one hand, inward stock FDI was more than one and a half times bigger in 2013 comparing the 2004 level, which represents a substantial inward capital flow. On the other hand, inward capital flow can be explained by increased international fragmentation of production due to outsourcing and offshoring of companies located in old EU members to low-wage new member states which is facilitated the international competitiveness of EU companies. Financial integration in EU10 countries according to a simple method (Feldstein-Horioka coefficient) depicts low degree of integration into global (or regional) financial markets.

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Foreign trade trends in the EU10 countries

Andrea Éltető

Introduction

The international crisis had serious effects on the economy of the European Union. The Central and Eastern European members (EU10) experienced the crisis effects to a different extent, but most of them were coping with high debt and decreasing GDP. Domestic consumption and investment activity fell, thus export remained the major possible source of growth. Although in 2009, exports shrank drastically (this was the year of the general international trade collapse) but in the next year, it already gained momentum. In this paper the characteristics of the export patterns in the EU10 member states are analysed.³⁷

In the first part, the foreign trade dynamics of the two regions are described. The second part analyses the product structure of exports and its changes. The third part deals with the inclusion of the observed countries into global value chains. The last part forms groups within EU10 and concludes.

General trends in foreign trade

EU10 countries differ regarding the economic role of the tradable sector and its development. As we can see in Table 1, already as early as 1995, the share of export of goods and services compared to GDP was higher than the EU average in almost all EU10 countries but this increased to extremely high levels in 2013, reaching almost 100% in Slovakia and Hungary. Estonia, Latvia, Slovenia and the Czech Republic also had rather high levels of "openness"³⁸. The values of Poland are similar to the EU-average and those of Romania are slightly below. Trade per capita data also show the importance of trade in a given country. All economies have higher figures than the EU-average. In this respect again Bulgaria and Romania have the lowest figure. Thus, in general the vast majority of EU10 countries are heavily dependent on exports.

During the past decade the share of EU10-trade increased not only in their GDP but in world trade too. Table 2 shows that their share in world exports is similar to their share in world imports. The table also demonstrates that since accession to the EU (and even before), the share of exports in world total exports has grown significantly and continuously for almost all countries. Even in 2009 when trade generally collapsed, these countries maintained (or even increased) their share in world trade. However, after the crisis, in 2012-2013, their share decreased, but in general still to a somewhat lesser extent than the market share of the whole EU. Certain countries have lost competitiveness after the crisis. The decrease of world export market share was most pronounced for Hungary with almost 20% loss³⁹. Slovenia has also shown a considerable decrease, while Lithuania, Latvia and Romania a high increase.

³⁷ Poland, Czech Republic, Slovakia, Hungary, Slovenia, Estonia, Lithuania, Latvia, Bulgaria, Romania

³⁸ Of course if we take the total trade into consideration – including imports – then figures compared to GDP are approximately double.

³⁹ Data from Eurostat, Macroeconomic Imbalance Procedure (MIP)

Table 1: Export of goods and services compared to GDP, percent

	1995	2000	2004	2009	2013	Trade per capita (USD)
European Union (27 countries)	29.49	35.79	35.71	36.87	44.83	11341
Czech Republic	48.08	60.93	62.98	58.95	78.60	22608
Poland	23.20	27.12	37.49	39.44	47.80	27600
Hungary	45.21	74.60	63.35	77.58	96.05	29572
Slovenia	49.59	53.70	57.81	59.35	78.15	11594
Slovakia	57.76	70.45	74.54	70.59	97.64	32570
Estonia	68.07	84.60	73.07	63.86	87.99	29022
Lithuania	41.78	41.95	44.04	43.93	59.67	20216
Latvia	47.46	44.51	51.85	54.23	86.90	15123
Bulgaria	51.92	50.46	51.93	47.51	70.22	8845
Romania	25.50	32.83	35.84	30.60	42.15	6653

Note: Trade per capita is estimated as an economy's total trade of goods and commercial services (exports + imports, balance of payments basis) divided by the population. It is calculated on the basis of data for 2010-2012 (WTO).

Source: Eurostat, WTO

Table 2: Market shares of the EU10 countries

	Share in world total Exports				Change 5 years*	Share in world total Imports			
	2005	2007	2009	2012		2005	2007	2009	2012
EU27 countries	17.50	16.44	16.20	14.67	na	18.58	18.38	17.39	15.37
Czech Republic	0.75	0.88	0.91	0.85	-7.4	0.71	0.83	0.83	0.76
Poland	0.86	1.0	1.08	1.01	-0.4	0.94	1.14	1.16	1.07
Hungary	0.60	0.68	0.67	0.56	-19.0	0.61	0.67	0.62	0.51
Slovenia	0.18	0.22	0.21	0.17	-16.6	0.19	0.22	0.21	0.17
Slovakia	0.31	0.42	0.45	0.44	-2.2	0.33	0.42	0.44	0.42
Estonia	0.07	0.08	0.07	0.09	7.3	0.09	0.11	0.08	0.09
Lithuania	0.11	0.12	0.13	0.16	20.8	0.14	0.17	0.14	0.17
Latvia	0.09	0.06	0.06	0.08	11.4	0.07	0.11	0.08	0.09
Bulgaria	0.11	0.13	0.13	0.15	5.7	0.17	0.21	0.18	0.18
Romania	0.27	0.29	0.33	0.31	10.5	0.38	0.49	0.43	0.38
EU10 countries	3.35	3.88	4.04	3.82	na	3.63	4.06	3.84	3.53

* Eurostat data (MIP)

Source: WTO Trade Profiles, (merchandise trade)

When analysing world market shares we should not forget that data include cross-border movements of parts and components, thus are influenced by the activity of global value chains (that are important in EU10 trade, see later). Exports of final goods are often composed of imports of intermediate goods (Beltramello et al. 2012), therefore export market shares and competitiveness largely depend on imports.

Poland, as the largest country is also the largest trader within the examined country-group. This has already been shown by its share in world exports and imports and also by the largest value numbers (Table 3). The second largest trade value belongs to the Czech Republic. Hungary, Slovakia and Romania have rather similar figures at the middle level and the trade of other countries is lower.

Table 3: Trade with and outside the European Union
2013

	Extra-EU export.	Intra-EU export		Extra-EU Import	Intra-EU import	
	mn euro	mn euro	share in total	mn euro	mn euro	Share in total
Hungary	19163	62206	76.45	21747	53602	71.14
Czech Republic	23380	98209	80.77	25381	82640	76.50
Slovakia	11264	53491	82.61	15912	45764	74.20
Poland	38677	113457	74.58	48595	105842	68.53
Slovenia	7998	17696	68.87	8722	16489	65.40
Estonia	3564	8705	70.95	2500	11169	81.71
Lithuania	10940	13604	55.43	10404	15804	60.30
Latvia	3661	7231	66.39	2694	10760	79.97
Bulgaria	8923	13306	59.86	10465	15381	59.51
Romania	15181	34392	69.38	13498	41781	75.58

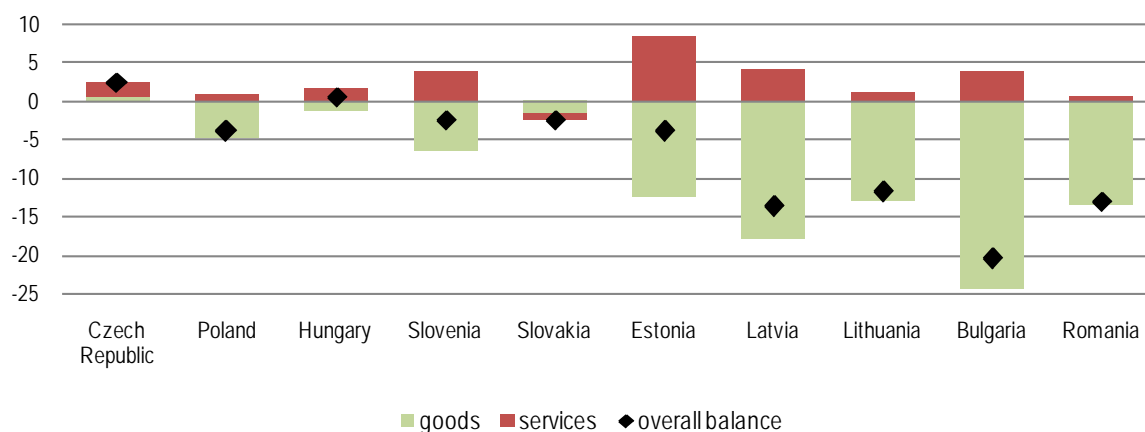
Source: Eurostat Comext

Table 3 also provides the share of the EU in exports and imports. The EU is the least “important” in Lithuanian and Bulgarian trade, with 55-60% share. However, more than 80% of Slovakian and Czech exports is directed to and around 80% of Estonian and Latvian imports come from the EU. An important feature of Baltic foreign trade is the significant trade with each other, which was promoted by EU accession. In the exports of Latvia, the two other Baltic States have a 28% share, in Estonian exports this is 16.2% and in Lithuanian exports 15.6%. In imports, the respective figures are 27.7%, 17.8% and 9%. Thus, Latvia is the most “Baltic-oriented” trader.

Trading with the EU shows a surplus for the Central-European economies and a deficit for the Baltic and Bulgaria, Romania. Regarding the past decade, trade balance in general deteriorated considerably as a consequence of the international crisis. Figure 1 shows that with the small exception of Hungary and the Czech Republic, all observed countries had negative balances in 2008. For 2013, significant adjustment took place in all countries. Adjustment was especially large in the Baltic countries, Bulgaria, Romania and Hungary (this latter had the highest trade surplus in the group surpassing 8% of GDP in 2013.)⁴⁰ Trade balance improvement in several cases was due to the decline and slowdown of imports and to the positive role of the service sector.

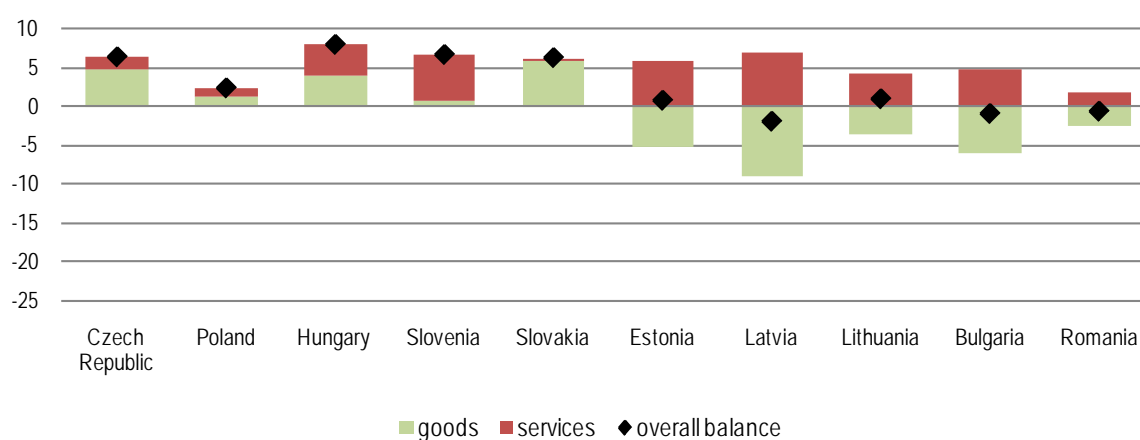
⁴⁰ The Hungarian trade surplus is mainly due to the marked decline in imports as a consequence of the crisis. Import growth remained moderate even afterwards due to low domestic demand (Bodnár et al., 2013). Halpern-Oblath (2014) also emphasize the poor performance of the economy (strong decrease of private investments, consumption) - partly explained by deleveraging in the private sector – underlying low import necessity and export surplus. Apart from goods, trade balance in services has always been positive since 2000.

Figure 1a: Trade balance in percentage of GDP, 2008



Source: Eurostat

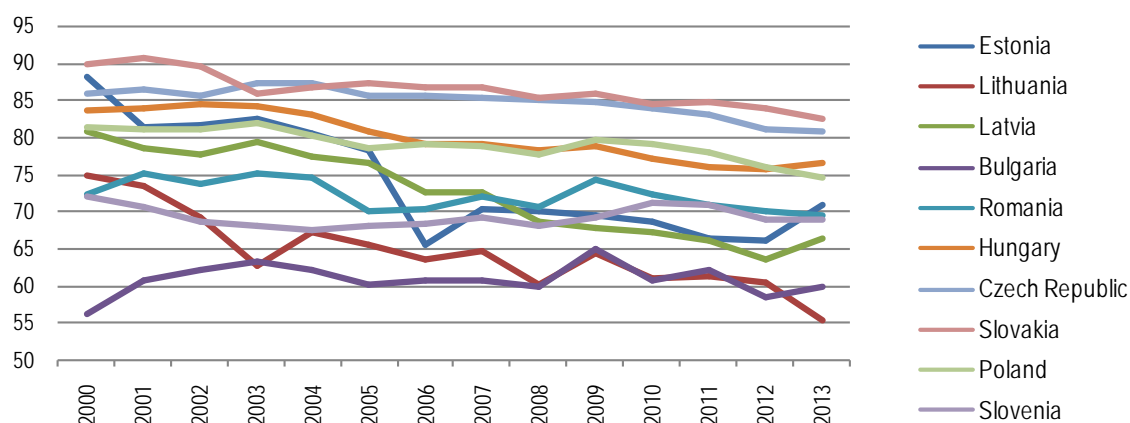
Figure 1b: Trade balance in percentage of GDP, 2013



Source: Eurostat

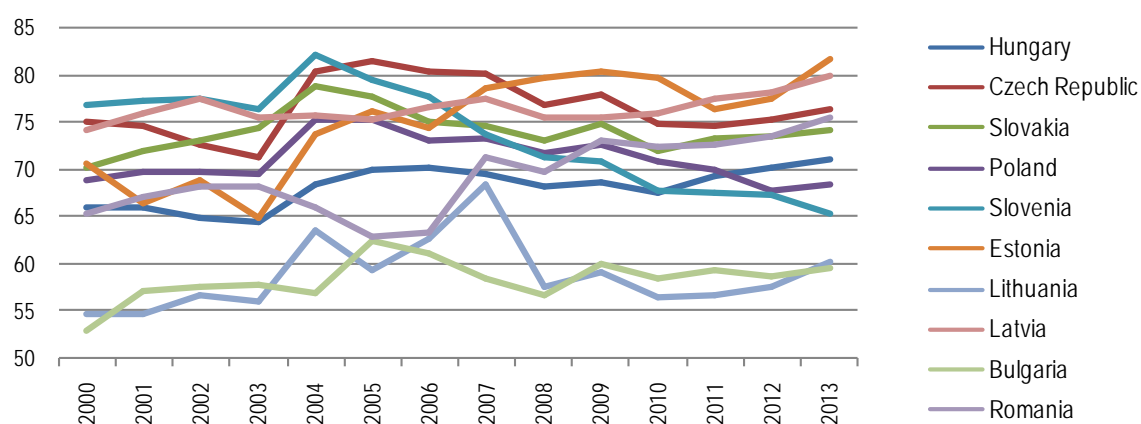
The role of the European Union as the most important trade partner for the EU10 area is unquestionable. The share of imports coming from the EU remained relatively constant, mainly between 60-80% for the EU10 during the observed period. In the case of exports it is perhaps surprising that we can observe a general constant decrease of the weight of EU in exports (see Figure 2a and b).

Figure 2a.: Development of intra-EU export shares



Source: Eurostat

Figure 2b: Development of intra-EU import shares



Source: Eurostat

Regarding the export dynamics, they also reflect the above described trend: in the past decade exports to non-EU areas have increased at a much higher rate than exports to the EU (Figure 3a and b). The outward increase has been the strongest in the case of the Baltic countries and Slovakia throughout the period.

Figure 3a.: Increase of Extra-EU exports

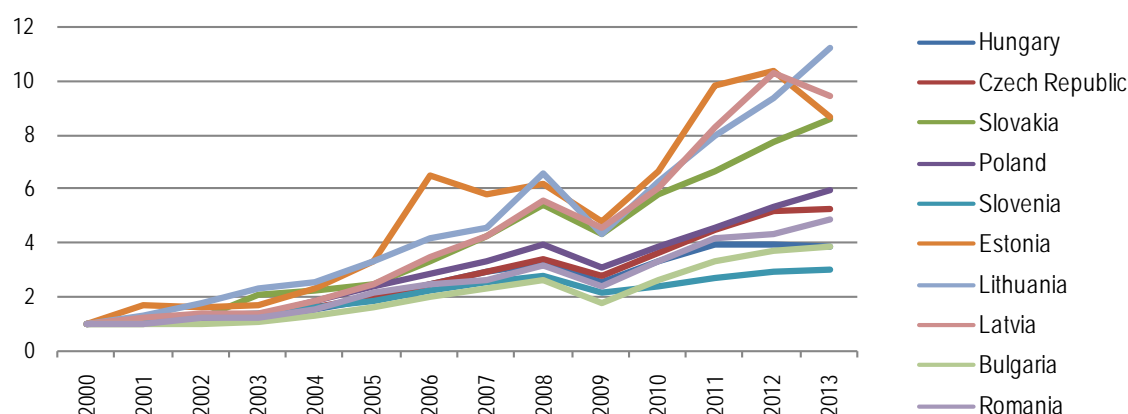
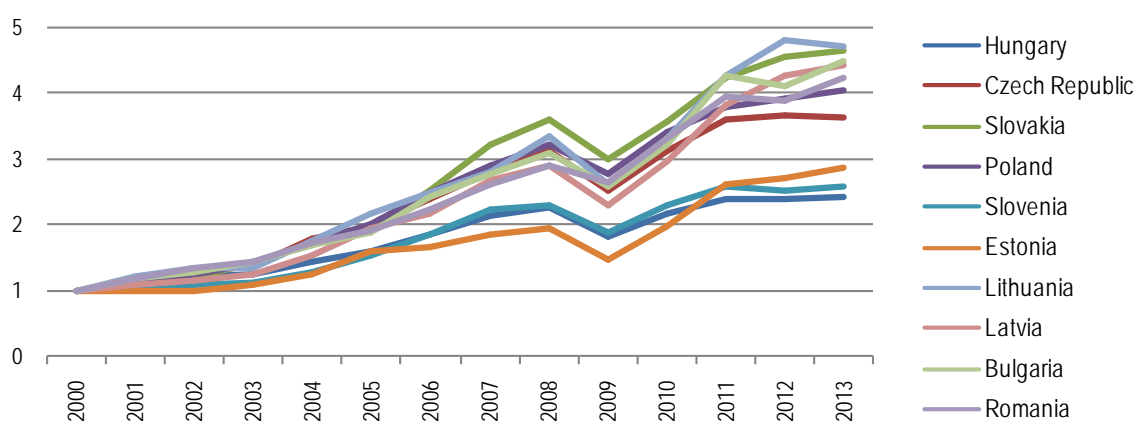


Figure 3b.: Increase of Intra-EU exports



Source: own calculations based on Eurostat data

Figure 3a shows that this dynamic increase of extra-EU exports is not only a consequence of the crisis, it has begun long before, since around 2004-2005. Regarding Estonia, the most important non-EU market is Russia with a 11.4% share of total exports in 2013 (in 2004 this share was 5.6%) and Norway and USA have around 3-4% share constantly. In the case of Lithuania, the share of Russia was 19.8% in total exports, being the most important export market (in 2004 this share was 9.3%). Belarus (5.2%), Ukraine (3.4%) and Norway (2.8%) are important non-EU markets too. In the exports of Latvia, Russia is also the leading market since 2010, it had a share of 16.1% in 2013 (in 2004 this figure was 6.4%).

Slovakia mainly exports to Germany and to neighbouring countries but the share of Russia (4%), China (2.5%) and Turkey (1.5%)⁴¹ increased between 2009 and 2013. Similar process has been going on regarding Czech exports, Russia increased its share (to 3.7%) and to a lesser extent China (1.2%) and Turkey (1.4%). Germany is

⁴¹ Data for 2013.

also the main market for Hungary just like neighbouring EU countries, but here too the share of Russia (3.1%), Ukraine (2.4), China (1.76%) and Turkey (1.65%) increased after the crisis. Slovenia's main export markets are also EU members but Russia increased its share – even before the crisis - and became the 6th most important destination with 4.6% share in 2013. The share of Serbia also increased. In Polish exports, Germany's weight was still 25% in 2013, but Russia ranked fifth with 5.3% share and Ukraine and Turkey also increased their weight (to 2.8 and 1.5% respectively). For Bulgaria and for Romania, Turkey is the most important non-EU partner with 9% and 5% shares of total exports.

In sum, data show on one hand that regarding foreign trade, the ten new member countries are integrated in the European Union. Trade has been intensive with the EU, because it increased already after the systemic changes during the nineties and because after the adhesion, mutual trade among the new members intensified. On the other hand, the share of the EU in exports has decreased constantly, or stagnated even after adhesion, because exports to non-EU regions have increased more dynamically than to the EU. The markets of Russia, China and Turkey (to different degrees) are more and more important for EU10 countries.

Export structure and changes

The export of a given country consists of export of goods and export of services. In certain cases for developing countries, service export can be very significant. As Brenton et al (2009) remark, articles on trade usually focus on merchandises and do not involve services, which can be difficult to quantify. Table 4 shows the development of the export share of services in the EU10 countries. The most important exported services are from the travel and commercial services sector. Developments in EU10 countries show a decreasing share of services in export, which is opposite to general EU trends. While in 1995, the Czech Republic, Slovakia and Hungary had more than 20% share of services in exports (above EU average then), by 2013 this weight decreased radically. However, this is only a relative decrease: service export of EU10 in absolute numbers increased to a larger extent between 2000 and 2013 than the EU-average (see last column). The reason is that service exports of EU10 increased to a lesser extent (around three times more) than the export of goods (6-9 times more) during the observed period.

Table 4: Share of services export in total export
percent

	1995	2000	2004	2009	2013	Export ratio 2013/2000
European Union (27 countries)	21.10	22.49	23.65	26.79	25.16	2.0
Poland	14.41	22.62	14.13	17.06	16.25	2.7
Czech Republic	24.82	18.93	13.48	16.41	14.50	2.3
Hungary	28.53	17.93	14.34	19.08	17.50	2.4
Slovenia	19.86	17.72	17.89	21.10	19.90	2.7
Slovakia	22.12	15.88	11.52	10.07	8.39	2.4
Estonia	34.09	31.17	32.69	36.43	27.05	2.7
Lithuania	15.28	20.88	20.96	18.38	17.89	4.7
Latvia	34.16	36.24	30.29	35.42	27.55	3.0
Bulgaria	21.05	33.50	30.93	29.50	20.75	2.5
Romania	16.88	14.85	13.37	19.57	17.30	5.2

Source: Eurostat

Kandilov – Grennes (2010) indicate that Central and Eastern European countries have different advantages over other low-cost Asian and South American rivals for different types of service exports. For those service exports that greatly benefit from geographical proximity or office hour synchronization, it is the smaller distance that gives CEE exporters a competitive edge. For other types of service exports that benefit from better law enforcement, it is the relatively good quality of legal institutions that provides an advantage for these countries.

Service export is the most important for Baltic countries. Based on the available maritime ports, transport is the most significant service sector. In the case of Estonia, “other services” (mostly business services) have also high share in service export (see Table 5).

The share of “other business services” is the highest in Hungary, Romania, Poland and the Czech Republic. Hungary has by far the highest export of “personal, recreational, cultural” services and royalties, licence fees. Romania had in 2013 the highest share of computer, information service exports (in 2004 this share was rather low). The business and informatics service export is due to the increased activity of multinational outsourcing, shared service centres. Romania is among the top ten global outsourcing locations,⁴² has information technology clusters and keeps attracting large telecommunication and informatics companies.⁴³

Table 5: Distribution of exported services
percent

	BG	RO	CZ	HU	PL	SK	SI	EE	LV	LT
Transport	20.15	34.98	23.53	23.39	30.50	28.13	25.48	37.72	45.18	61.16
Travel	53.42	10.04	32.46	23.80	28.44	33.65	38.75	23.43	17.63	20.59
Other services	26.42	54.98	44.01	52.81	41.06	37.65	35.77	38.85	37.20	18.24
<i>Communications</i>	1.25	4.82	2.47	1.37	1.36	1.90	5.94	4.03	2.88	1.52
<i>Construction</i>	1.00	3.87	2.78	1.81	3.80	4.25	5.15	5.01	3.29	2.63
<i>Insurance</i>	2.29	0.87	1.27	0.18	0.51	0.66	1.28	0.11	0.54	0.00
<i>Financial services</i>	0.69	2.03	0.15	0.89	1.25	0.75	0.46	1.63	6.99	0.92
<i>Computer, information</i>	8.83	13.75	9.54	6.49	7.36	7.47	2.52	5.67	5.20	1.71
<i>Royalties, licence fees</i>	0.35	0.86	1.14	5.61	0.79	0.06	0.79	0.19	0.39	0.34
<i>Other business services</i>	11.16	27.67	25.39	28.48	25.04	21.84	18.58	20.68	16.59	9.78
<i>Personal, cultural, recreational services</i>	0.79	0.29	1.11	7.43	0.94	0.61	0.95	0.71	0.52	0.50
<i>Government services n.i.e.</i>	0.06	0.82	0.16	0.55	0.00	0.10	0.12	0.81	0.80	0.85

Source: UNCTAD: Data on Trade in Services⁴⁴

⁴² <http://www.outsourcing-journal.org/cee-2/915-romania-among-top-10-outsourcing-locations-globally>

⁴³ <http://business-review.eu/featured/vodafone-opens-new-shared-services-center-in-romania-receives-state-aid-66715>

⁴⁴ “Personal, cultural, recreational services”: Audio-visual and related services cover the production of motion pictures, video and radio programmes, musical recordings, (and similar) including fees paid to personnel involved. Related limited distribution rights are also covered. Fees paid for sporting, theatrical and similar events belong to this category as well. Services associated with museums, libraries, archives, and other cultural and sporting activities and education and health services are also covered under this category.

“Computer and information” services consist of hardware and software-related services and data-processing. New agency services include the provision of news, photographs and feature articles to the media. Other information services cover database services: database conception, data storage and dissemination of data. Direct non-bulk subscriptions to periodicals regardless of means of information transmission also belong to this service category.

“Other business services” include merchanting and other trade-related services; operational leasing services; and miscellaneous business, professional and technical services (legal, advertising, consulting, accounting, R&D, etc.)

Merchandise export concentration

Focusing on the export of goods, an important structural feature can be concentration or diversification. According to one viewpoint, concentration increases vulnerability, while diversified trade can mitigate crisis effects. However this statement should be refined: a lot depends on the type of products the country is concentrated on (primary and homogeneous products or not). Bacchetta et al. (2009) show that export diversification (both product and geographic type) increases with the level of development of a country. Cadot et al. (2011) show that this increase of export diversification lasts to a certain point and for highly developed countries concentration is increasing again. Across countries and time, there is a hump-shaped relationship between export diversification and level of income, with a turning point for reconcentration around 25 000 dollars per capita GDP (PPP). The reason is that richer countries close old export lines far from their endowments (Cadot et al., 2011).

The level of export concentration varies among EU10 countries. Gurgul-Lach (2013) examine the economic growth effects of export diversification in the case of CEE countries using data from 1995-2011. According to their results, export concentration correlated with economic growth before the crisis but afterwards the situation changed. Countries with more concentrated export structures (like Slovakia, Lithuania) experienced stronger growth decrease than those with more diversified exports (like Poland and the Czech Republic). These latter economies experienced smaller shocks.

Let us examine the recent characteristics of EU10 export concentration. Based on SITC 3 digit data⁴⁵ the Herfindahl-Hirschman concentration index (Hirschman, 1945) was calculated for the exports of countries towards the EU and non-EU areas.

$$HHI = (\sum s_i)^{1/2}$$

where „i” is the given product group, „s_i” is its share in total exports. If HHI is 100 we speak about total concentration, the smaller the index the more diversified the export structure is.

Table 6: Concentration indices, 2004-2013

	Extra-EU export.			Intra-EU export		
	2004	2008	2013	2004	2008	2013
Hungary	22.98	29.34	19.31	19.77	17.04	15.31
Czech Republic	13.76	14.65	17.52	14.87	15.02	15.94
Slovakia	44.58	33.56	38.95	17.87	20.70	20.36
Poland	14.17	13.17	13.65	14.81	14.18	12.76
Slovenia	18.50	17.00	19.81	17.51	18.69	16.13
Estonia	15.75	25.00	17.09	22.47	14.16	18.21
Lithuania	29.24	22.87	19.95	23.53	27.53	28.36
Latvia	17.16	15.26	19.15	21.80	13.75	14.09
Bulgaria	20.45	29.97	30.28	17.97	16.89	14.96
Romania	22.82	22.70	18.97	19.74	15.33	15.90

Source: author's calculation from Eurostat data

⁴⁵ The 3 digit product list is here:
http://unctadstat.unctad.org/UnctadStatMetadata/Classifications/UnctadStat.SitcRev3Products.Official.Classification_En.pdf

As Table 6 shows, the values of concentration indices are quite similar for the ten economies, except for Slovakian export, Bulgarian extra-EU and Lithuanian intra-EU export, these are much more concentrated than the other flows.

In general terms, extra-EU exports are more concentrated than intra-EU ones. However, regarding a longer period, we observe increases and decreases in export concentration. Concentration towards extra-EU markets increased somewhat in the case of Bulgaria, Latvia, Slovenia and the Czech Republic. Hungary and Poland has diversified their exports a little to both areas. Slovakia and Lithuania have decreased concentration to the extra-EU region but increased it to EU areas.

What are the main exported products from these countries? Table 7 enumerates the most important five product groups (in order of importance, among 280 items in the SITC 3 digit list) in extra-EU and intra-EU exports. Their aggregate share in total exports is given in brackets.

Table 7: Main export products and structural similarity between intra- and extra-EU relations

	Extra-EU	Intra- EU	Similarity index 2004	Similarity index 2013
Hungary	Telecom. equipments, medicaments, motor cars and parts, autom. data processing machines, electrical app. (35%)	Piston engines, motor cars and parts, telecom.equipments, electrical app.(27%)	64.8	71.5
Czech Republic	Motor cars and parts, autom. data processing machines,telecom.equipments, electrical app.(31%)	Motor cars and parts, autom. data processing machines,telecom.equipments, manuf.of base metal (28%)	70.1	73.3
Slovakia	Motor cars, their parts telecom equipments, monitors, pumps and compressors (59%)	Motor cars, monitors, telecom equipments,petroleum + oils (40%)	53.9	62.3
Poland	Ships, boats, telecom equipments, furniture, motor vehicle parts, petroleum oils (19%)	Furniture and parts, motor cars and parts, monitors, engines (20%)	68.0	69.0
Slovenia	Medicaments, motor cars, wood, paper, household electrical equipm.(32%)	Motor cars, medicaments, electr.machinery, petroleum oils, furniture (27%)	66.2	63.7
Estonia	Petroleum oils, civil engine.plants,telecom.equipm.,alcoholic beverages,paints (30.0)	Telecom.equipments,petroleum oils, furniture,electric current,manuf.of base metal (29.2)	38.7	58.5
Lithuania	Petroleum oils, motor cars,vegetables,wheats, fruits,nuts (31.6)	Petroleum oils, furniture,fertilisers, polyacetals, articles of plastic (42.8)	48.3	57.2
Latvia	Alcoholic beverages,wheat, medicaments,wood,ferrous waste (31.1)	Petroleum oils, wood, telecom.equipm., wood products (23.3)	60.4	50.4
Bulgaria	Petroleum oils, copper and ores, medicaments,wheat (47.5)	Copper, oil seeds, petroleum oils,electrical app.for switching,wheat (24.9)	57.60	56.9
Romania	Petroleum oils,motor vehicles and parts, wheat, ships,boats (34.9)	Equipm.for distrib.electricity, motor cars and parts, furniture, footwear (27.8)	58.4	52.1

Hungary, the Czech Republic and Slovakia export mainly automotive and telecommunication, electrical products. These are mainly produced by affiliates of multinational companies. In Polish exports ships and furniture and in Slovenia medicaments are rather significant. The percentage numbers in brackets reinforce the above described concentration patterns: Slovakian extra-EU exports are strongly concentrated, the first five product groups represent more than half of all exports. Slovak export is concentrated on personal cars.

Regarding Baltic countries and Bulgaria, Romania, the pattern is different. They export more raw and base material, agricultural and wood products. Petroleum oil products lead the exports in most cases. In Estonia, it is Russian oil exported to other countries through Estonia's ports. Transit volumes of oil products are large, but added value in this sector is small.⁴⁶ Transit of Russian cargo and oil is important in other Baltic ports too. In Lithuania oil refinery is also important, PKN Orlen Lietuva is the most significant supplier of petrol and diesel fuel in the Baltic countries, its products are also exported to Western Europe, USA, Ukraine, and other countries⁴⁷. In Bulgaria (Burgas) and in Romania (Ploiesti) there are two big refineries of Lukoil that export around half of their products abroad.⁴⁸

In order to measure to what extent the export structures are similar to EU and to non-EU areas, the Finger-Kreinin similarity index was calculated (Finger-Kreinin, 1979):

$$S(ab,c)= \{SUM_min[Xi(ac),Xi(bc)]\} * 100$$

where $Xi(ac)$ is the share of „i” product in total exports to the EU (country “a”), $Xi(bc)$ is the share of „i” product in total extra-EU exports (country “b”).

Table 7 shows the values of the index for 2004 and 2013. The Czech Republic and Hungary export in the most similar structure to the EU and to non-EU regions. In the majority of countries, intra-extra-EU similarity increased between 2004 and 2013, except for Slovenia, Bulgaria and Romania. In general, Central-European export to EU and non-EU markets are more similar and the export of Baltic countries and Bulgaria, Romania differs more in the case of EU and non-EU markets.

Technology intensity

Based on the above shown pattern of main products, it is no wonder that the share of high-tech products in exports is by far the highest in Hungary, Czech Republic, Estonia and Slovakia (see table 8, the list of high-technology products is given by the Eurostat⁴⁹ based on the OECD definition.).

⁴⁶ <http://www.swedbank.lt/lt/previews/get/4259/rss>

⁴⁷ <http://www.ornenlietuva.lt/EN/Company/Pages/default.aspx>

⁴⁸ http://www.lukoil.com/static_6_5id_257_.html

⁴⁹ http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf.

Table 8: Share of high-tech products in exports
percent

	Extra-EU export.			Intra-EU export		
	2004	2008	2013	2004	2008	2013
Hungary	23.9	31.1	19.5	17.9	14.5	12.8
Czech Republic	18.1	16.9	18.3	12.4	12.2	12.4
Slovakia	3.9	5.2	10.1	2.5	4.9	9.3
Poland	3.9	5.0	8.4	2	3.9	5.9
Slovenia	8.5	8.1	8.6	3.2	3.7	3.9
Estonia	6.6	4.5	10.5	10.7	8.7	16.6
Lithuania	3.1	6.8	4.6	2.0	6.1	6.5
Latvia	6.5	6.0	6.8	1.9	3.7	8.4
Bulgaria	3.0	3.4	3.8	2.1	3.6	3.8
Romania	2.8	4.4	3.1	3.1	5.6	6.6

Source: author's calculations from Eurostat Comext database

Table 5: Share of high-tech products in imports
percent

	Extra-EU export.			Intra-EU export		
	2004	2008	2013	2004	2008	2013
Hungary	33.1	26.2	26.4	12.5	11.4	11.1
Czech Republic	23.6	21.3	24.9	12.2	10.9	11.6
Slovakia	12.3	8.7	19.8	8.5	9.8	14.9
Poland	10.7	8.9	10.4	8.5	9.5	10.2
Slovenia	8.4	5.8	5.9	7.3	7.2	6.4
Estonia	18.4	8.2	16.4	10.2	7.6	12.8
Lithuania	4.8	2.8	2.2	8.3	6.3	7.1
Latvia	6.1	5.7	13.3	6.6	6.9	6.7
Bulgaria	7.0	3.4	3.9	5.9	8.1	8.7
Romania	12.3	7.8	8.8	6.8	8.6	10.1

Source: author's calculations from Eurostat Comext database

In Estonia, the massive high-tech export of telecommunication equipment is due to the Swedish Ericsson affiliate⁵⁰ (that bought the local Elcoteq affiliate in 2009). Like other EU10 countries, Estonia does not possess a highly R&D intensive ICT and electronics industry. Foreign investment enterprises have located only relatively less demanding production functions here (Tiits-Kalvet, 2012).

The share of high-tech products in imports is also high and even higher in several cases than in exports. Generally, in 2013, there were three EU10 countries that had more or less equal weight of high tech products in export and import: Czech Republic, Hungary and Slovakia. They import several high tech products from non-EU countries as well, for example from Asia. The Central Europe-Asia trade is especially high-tech intensive (Éltető-Toporowski, 2013).

⁵⁰ <http://www.balticbusinessnews.com/article/2012/8/21/ericsson-eesti-becomes-estonia-s-largest-manufacturing-corporation>

Certainly, as Damijan et al. (2013) states, an increased share of high-technology products in exports is not per se an indicator of higher export competitiveness. They explain that traditional export items have been substantially upgraded or differentiated in the CE countries. Secondly, export restructuring has been accompanied by quality upgrading as indicated by increased value added per employee, increased unit values and more engagement in medium and high quality segments of industries. Thirdly, the share of vertical and horizontal intra-industry trade with the EU has increased as a consequence of multinational production networks. Of course, structural change in itself does not necessarily lead to increase of competitiveness, quality of changes matter. Benkovskis and Wörz (2012), analysing export competitiveness of EU10 in 2004-2007, show that these economies experienced a loss in price competitiveness and a larger increase of unit values of their exports than their competitors. Furthermore, the average quality of their goods increased more than their export prices, indicating improvements in non-price competitiveness.

Bulgaria, Romania, Latvia and Lithuania have relatively low share of high-technology exports to both EU and non-EU areas. The majority of Lithuanian manufacturing value-added is produced in low-tech industries (Laskiene-Venckuviene, 2014) and Lithuanian export is specialised on food, drinks, tobacco and chemical products (Bernatonyte et al., 2013). Bulgaria's low share of high-tech-intensive export is attributed among other factors to the limited and constantly decreasing R&D expenditures. As Zhelev-Tzanov (2012) concludes EU integration of Bulgaria has not yet accelerated structural transformation and technological upgrading as in other EU10 countries, the process has already started but it is rather slow. In Romania, the automotive multinational affiliates induce certain high-tech export (Platis-Hagiu 2012) but the general level is low.

Concerning the high-tech-intensity of trade, the heavy weight of high-tech import beside export and the identity of the trading companies lead us to conclude that the traded high tech products are mainly those automotive and electronic ones that are produced in the networks of global value chains.

Global value chains and EU10 countries

The increasing role of global value chains (GVCs) was already apparent in the beginning of the 2000s⁵¹. Fragmentation of production increased to a considerable extent in the last decade, especially in the electronic, clothing and automotive industry (Lall et al. 2004, Kimura et al. 2005, Srholec 2006). Regarding trading companies, export activity in general is quite concentrated in Europe. This means that in most countries, the top five percent of the companies account for 70% or more of the total manufacturing exports (Mayer-Ottaviano, 2007). In developing countries large exporters are in several cases foreign owned multinationals.

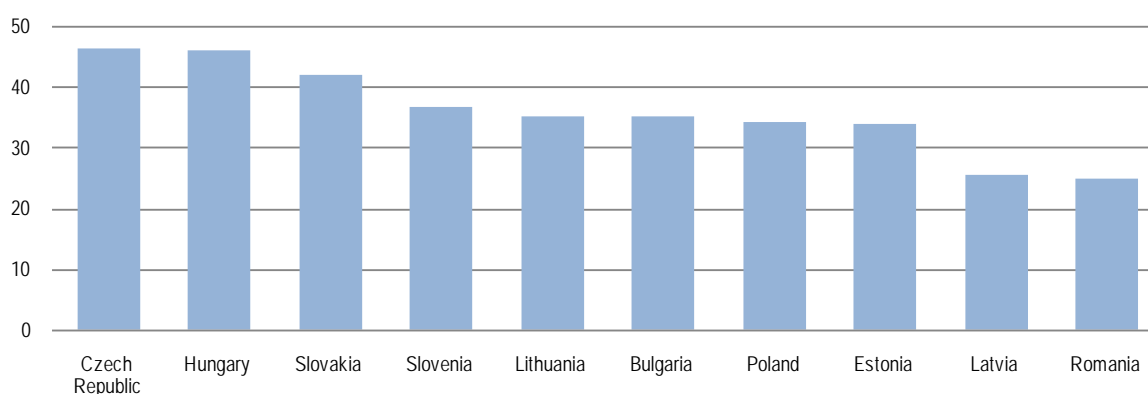
Having perceived the decisive role of multinational networks, several developing countries seek to join GVCs to assemble goods or make specialised inputs. This is easier and faster than building own supply chains but "less meaningful" (Gereffi 2013). Simply participating in GVCs does not necessarily develop domestic innovation, institutions, linkages and labour conditions. The challenge for companies in developing countries is how to upgrade in a beneficial way within the supply chains.

⁵¹ Baldwin (2012) analyses the development and role of GVCs in world trade in detail. The development of ICT technologies from the second half of the 80 years made it possible to coordinate production from a long distance and wage differences between developed and developing countries made outsourcing of production profitable for companies. Thus the second global unbundling of production took place. (The first unbundling took place after industrial revolution and railway network creation in the late 1800s.)

International trade in global production networks increased much faster than “normal” trade. According to the report of UNCTAD (2013) 80 per cent of global trade (gross exports) is linked to the production network of multinational companies. Because of international fragmentation, countries rely also on foreign resources to produce and export goods. Exports not only reflect the embodied technology and relative domestic endowments, but also the technology and factor endowments of countries from which the country imports intermediate goods (Beltramello et al., 2012). Thus, imports of intermediates increasingly determine the export competitiveness of countries and simply looking at the evolution of exports may be misleading for defining the competitive position of a country (see Box 1).

The foreign value added content of exports is a kind of measure of vertical specialisation and GVC inclusion. Foster-Stehrer (2013) analysed countries in this respect, based on world input-output table data. Between 1995-2011 this foreign value added increased in almost all countries and within the EU, Central European countries have very high levels (Figure 4)

Figure 4: Share of foreign value added in exports, 2011
percent



Source: compilation from Foster-McGregor and Stehrer, 2013, p.356.

Among the EU10, Hungary, the Czech Republic and Slovakia are especially strongly linked to GVCs, and Latvia, Romania are linked the least. As we have seen, the effect of foreign multinational companies on export is the highest in the first three countries. The old EU member states, mainly Germany involved these economies into their production networks already before legal accession to the EU. There had been different stages of this kind of integration process, as the example of automotive industry shows: first the regional market was attractive, than the Central European countries became hosts of export-oriented assembly and component parts factories. Foreign suppliers themselves relocated their production to the CE region (Fortwengel, 2011) and some R&D intensive functions were also relocated to this region.

Non-EU multinationals “discovered” the advantages of the CE region too. Ando and Kimura (2013) even argue that Central Europe connects Asia and Europe together within the global production networks. Due to the dominance of East Asia in electronics industry, European multinationals have been importing electronic parts and components from their affiliates and other Asian firms to use them for their production in CE. The automotive industry agglomerations in CE import machinery parts and components from Asia. Furthermore, certain Asian

firms themselves have invested in the CE countries and intensified sourcing from Asia. These all have resulted in tight production links between East Asia and CE to serve the European market. The strong inclusion into multinational networks shaped the revealed comparative advantages and export competitiveness of CE countries in the past decade (see Box 1).

Box 1. Competitiveness and comparative advantages in Central Europe

Export performance of countries is often bound to their competitiveness. Competitiveness is usually also a highly debated concept. There are several ways to measure and define the competitiveness of a country. However, according to well-known authors (Porter, 1990, Krugman, 1996) it does not make sense to talk about competitiveness of countries. Porter (1990) in his book enumerates several concepts of competitiveness and their factors but argues against generalisation. He argues that instead of competitiveness of nations, productivity is more important and even productivity is difficult to interpret on national level. Productivity makes sense only at the level of industrial branches. Krugman (1996) does not favour the concept of national competitiveness either. He states that countries are not like two competing factories; international trade is not a "zero sum game". Living standard in a given country depends on its own domestic economic achievements and not on the comparison with other countries.

An often used measure concerning competitiveness is the index of revealed comparative advantage (RCA), or rather various types of RCAs. RCA measures for final export goods indicate if a country has a comparative advantage in the production in an industry, while RCA measures for imported intermediates show whether a country has a comparative advantage in the assembly in a given industry. However, the role of GVCs questions this; countries can import intermediates for the production of other intermediates. Cross-border movement of parts and products within the same production network increases the trade of developing countries, "artificially" generating international trade with each crossing (Athukorala et al, 2006 - Mani, 2000).

As a consequence, the competitiveness of countries can be overestimated based on gross export data and on indices (such as revealed comparative advantage) calculated from gross exports. This is especially true for open countries that rely heavily on imported intermediates. Based on world input-output table data, Timmer et al (2012) show that the use of imported intermediate inputs and the inclusion in global value chains have increased radically between 1995 and 2008 in the case of CE countries. Similarly, using world input-output tables, Grodzicki (2014) calculates RCAs based on GVC income. The results show that between 1995 and 2011, Central European economies lost their previous comparative advantages in traditional industries and formed new RCAs in different types of industries. The Czech Republic and Slovakia managed to maintain some of their previous advantages in resource-based manufacturing and Hungary in chemicals but at the same time they developed new, strong industries in modern types of activities like transport equipment, machinery and electrical products. Poland, on the contrary, did not undergo such a structural change – its RCAs are still mainly in resource-based industries (Grodzicki, 2014).

The international crisis in 2008 and its effects had negative effects on GVCs too. The trade collapse in 2009 was deep and was worsened by the general credit crisis. According to literature, global value chains can be a channel for the rapid transmission of both real and financial shocks. Demand drop for final goods and credit problems can immediately affect flows of intermediates, especially when supplier contracts are short-term. (Milberg & Winkler,

2010). As a kind of opposite opinion others (eg. Altomonte & Ottaviano, 2009) point out that supply chains could also have been a factor of resilience in the crisis, as existing supply chains are difficult and undesirable to abolish because of contractual arrangements and high initial sunk costs. This drop and quick recovery can be caused by the effect of crisis on GVC trade that is mentioned by several authors as the “bullwhip effect” (Escaith et al. 2010, Altomonte et al. 2012, Zavacka 2012). This means that low demand expectations force lead firms to adjust by their inventories. After the crisis, if demand for the product is recovered, sold out inventories can be accumulated again, so trade increase can also be magnified by GVCs. Sass – Szalavetz (2014) review and sum up the empirical literature on the role of GVCs in the crisis and conclude that the results depend on different approaches and different methodologies, datasets and time period. They also reinforce the twofold effects of GVCs: on the one hand transmitting and amplifying the crisis contributing to the decrease of international trade; on the other hand producing a stabilizing effect. This latter took place in a slightly longer run, attributed to the bullwhip effect and to the fact that companies inside the value chain helped each other by financing or network rebuilding.

In the EU10 and worldwide, the crisis resulted in reorganisations, relocations of firms. Trade flows largely controlled by multinational companies have also been affected by these relocation decisions. Companies relocated mostly for improving their competitiveness and this had both negative and positive effects on the trading of EU10 countries. Hunya – Sass (2014) found increasing relocation activity to Hungary in the post-crisis years until 2011 and found evidence of re-shoring or back-shoring as well. Relocation took place also from Hungary, decreasing the Hungarian export capacity significantly in 2012-14⁵². On the other hand, some additional investments have been relocated from Western Europe to the EU10 (like Poland) due to low cost seeking of multinationals (Éltető-Toporowski, 2013).

Besides relocation, the crisis probably could induce other positive effects on GVCs in the CE and Southern countries. Sass – Szalavetz (2013) analysed the effects of crisis on GVC integrated Hungarian automotive and electronic industry based on interviews. According to their results, firms had functional upgrading effects induced by the crisis and reorganisation of multinationals.

Conclusion

The recent international crisis accentuated the importance of exports for several EU member countries. The EU10 group is not an exception in this respect, most of them are strongly foreign trade – dependent economies. The crisis had significant effects on the foreign trade of the EU10 countries, partly in volume (drop and increase), partly geographically (increase of non-EU areas). These effects can largely be bound to the international activity of multinational companies.

The foreign trade of the EU10 had been directed towards the European Union already well before the official accession. The EU-integration had a major enhancing impact on mutual trade among these countries. Despite this trade intensification the share of the EU in exports shows a decrease. Based on the trade performance of EU10 described in this study we can conclude that the foreign trade patterns have not been similar for these economies. We can form two broad country-groups in this respect.

⁵² In 2012 Nokia downgraded its affiliate in Hungary, switched assembly to Nokia's plants in South Korea and in Beijing. Therefore, in 2012 the before huge export of cellular phones from Hungary decreased. In 2014 Microsoft (the owner of Nokia Komárom company) announced the closure of the firm.

The first group consists of the Czech Republic, Hungary, Slovakia and Estonia. The role of export in these small countries is very important for growth, these are extremely open economies, the share of exports in GDP and trade per capita are very high. These economies became strongly integrated in the global value chains that shape their trade structure, dynamics and volume. Their exports are relatively high-tech intensive. The most vulnerable among these economies is Slovakia, because its trade pattern is extremely concentrated on motor vehicle exports.

The rest of EU10 countries consist a second group, where integration into multinational networks, high-tech export is lower, and mainly lower-technology products are exported. This group is even more heterogeneous than the previous one, there are larger and smaller countries within.

The inclusion of the EU10 region into the global value chain activity is a fact. The future of these economies depends on how they can use this integration, on what level their firms can participate in the worldwide production tasks. Fruitful participation in the global value chains depends largely on the local capacities to absorb foreign technology, thus on the quality of human capital. In the Baltic countries (but to lesser extent also in other EU10 economies) emigration of well qualified people is a severe problem, because it reduces human resources, the level of education and has become a long-term mass-phenomenon (Kirch et al. 2011, Staehr, 2013). In all EU10 economies the efficient development of human capital and education system would be essential to provide a long-term base for good export performance and growth.

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The new member states and the Common agricultural policy: Expectations, preparation and results

Miklós Somai

Introduction

The year 2014 offers good opportunity to look back on the history of the first waves of Eastern enlargement. Thus, it is fully packed with expert meetings and conferences aimed at taking stock of the experiences of first 7-year (in the case of Romania and Bulgaria) or 10-year (for the others) membership within the European Union (EU). The introduction of the common agricultural policy (CAP) and the gradual application of its main support schemes for farmers are emerging as key issues of interest at the above-mentioned events.

Apart from giving a short explanation about the exceptional character of the Eastern enlargement, the purpose of this study is to highlight some lessons learned from agricultural accession, by displaying how production and trade evolved in EU's new member states (EU10).⁵³ Based on data of development dynamics – and with some focus on Hungary – I will attempt to present differences in development paths and consider some reasons lying behind such differences. In addition, I will devote particular attention to the opportunities and challenges the new multiannual financial framework (MFF 2014-2020) may bring to EU-10 farmers through the reformed CAP.

Exceptional enlargement – starting conditions

For some of its important features, the EU 2004 enlargement maybe regarded as exceptional. First, never before so many countries could join the EU at the same time; second, never before democratizing states had been kept waiting for so long to enter the integration; third – and focusing on the practical implementation of the CAP instruments in the new member states – never before had there been so much deviation from EU's own rules. If one puts together these three features of the 2004 enlargement, it is clear that never before had newcomers been treated on such an unequal footing to those already inside.

Before 1993, it was appropriate to apply a transition period to the acceding countries while duties, quotas and other barriers to trade between the old and the new members had been dismantled parallel to the process of extending the CAP and its subsidies to the new entrants. However, since 1993, with the launch of the European single market, border controls between member states were eliminated. Hence, it was natural that the EFTA enlargement (Austria, Finland and Sweden) in 1995 was already carried out under a “Big Bang” scenario; as of the first day of their membership, the three new EU countries became fully integrated into the single market. Their products of both industrial and agricultural origin gained free access to the old member states' markets and vice versa, while their farmers obtained all CAP subsidies available in the same way as did their counterparts in the

⁵³ EU10 covers the three Baltic States (Estonia, Latvia and Lithuania), the two countries of the Balkans (Romania and Bulgaria), the Visegrád countries (Hungary, Poland, Slovakia and the Czech Republic) and Slovenia. As a methodological remark, it should be noted that due to lack of sufficient comparable data for EU10 countries, I sorted the new member states based on some other criteria, too. Accordingly, countries of the 2004 enlargement are named NMS or NMS (2004). NMS without Malta, Cyprus are named EU8, and EU8 without Hungary are named EU7. The old member states are called EU15. Finally, the label V4 (or Visegrád countries) covers Poland, Hungary, Slovakia and the Czech Republic.

old member states. From a point of view of effective competition policy, it was completely natural and necessary that after the mutual and immediate market opening, the agricultural producers of the new members got into a regulatory and subsidisation environment identical to that faced by their homologues in the old member states.

Having all the above in mind, it was very disappointing watching from Eastern Europe the debate on the agricultural aspects of the 2004 enlargement carried out during the 1990s and early 2000s. In these preparatory negotiations, experts called upon by the Commission had for long years been arguing about whether it would be wise, beneficial or necessary to extend CAP direct payments, i.e. the main part of the farm subsidies, to the new entrants. They did so as if such double standards between farmers of old and new member states were not prohibited by EU competition law to persist. Unfortunately, during the long negotiation period before accession, the theory according to which cheap, abundant and underutilised agricultural labour and land in EU10 would represent comparative advantages for their farmers became widely accepted in the old member states (EU15).⁵⁴ This approach, however, badly underestimated the capital intensity per worker of the principal technical functions of modern agricultural production.⁵⁵ According to the then widespread professional perception, candidates from Central and Eastern Europe were less in need of price and income (i.e. CAP first pillar) support – as they produced ‘cheaply enough’ – than that of structural aid, to be financed from the second (i.e. rural development) pillar of the CAP.

By December 2002, when enlargement negotiations were reaching their final stage, the East European negotiating politico-economic elite had already got accustomed to their Western colleagues’ increasingly entrenched position described above. Finally, they came to the conclusion that in order to realize accession within a reasonable timeframe, they would have to accept a scenario of full membership only at the end of a long transition period. The result is well known: the transition period for agricultural accession was set at ten years, only at the end of which (i.e. in 2013) gradually introduced direct payments reached the normal EU level. In addition, production levels used to determine per hectare direct payments in NMS, unlike in EU15 (i.e. ensuing from normative EU laws), were not set out based on the late 1980s, but on a period much closer to the enlargement. For countries (e.g. Hungary) where the negative effects of the systemic transition had been felt longer than elsewhere (e.g. Poland) and agricultural production remained under the pre-transition level, or at best fluctuated heavily, this arrangement limited the subsidies available under the CAP regime even further. Overall, Brussels was more inclined to circumvent their own established rules and regulations of both agricultural and competition policies than to treat the new Central and Eastern members as equal partners by ensuring them full rights under the *acquis communautaire*.

Ultimately, this unprecedented discrimination of the new entrants – exposing their farmers to uneven competition stemming from a combination of compulsory immediate full opening of their markets and a temporarily unequal support system – became a precedent for subsequent enlargements of the EU towards Romania and Bulgaria in 2007, and Croatia in 2013.

⁵⁴ See the papers of Buckwell, Josling, Mahé, Tangermann and Tarditi referred to in Somai (2002).

⁵⁵ Pouliquen (2001) p.15

Main trends

Despite the significant increase in agricultural output, the accession to the EU itself could not reverse the long-term trend of decreasing primary sector (agriculture, forestry and fishing) in the economies of the NMS. It was clearly so because from the accession until 2008, growth in the other two main (i.e. secondary and tertiary) sectors of the economy happened to be even faster. From 2011 onwards, however, as a delayed reaction to global financial and economic crisis, which caused deeper recession in manufacturing and services than in primary sectors, the above-mentioned trend seems to be broken – at least the available data provide such a picture. Between 2011 and 2013, the share of primary sector in total gross value added (GVA) of the NMS stabilized at around 3.5 per cent, a level somewhat higher than that reached in the years of 2009 and 2010, and close to what it was in 2006/2007.⁵⁶ It should be noted that there was a similar break in the EU15, although, at a much lower level than in the NMS; the primary sector share stayed at around 1.5 of total GVA.

We can observe a similar phenomenon in employment as well, with the difference that the declining trend of the primary sector in NMS has only flattened since the outbreak of the crisis – at around 9 percent of the total employment, so *circa* three times the level in the EU15⁵⁷. Of course, this does not mean that there would not have been any halt or reversal of the trend in the cases of some individual member states. For example, between 2009 and 2011, the share of agriculture in total employment rose from 4.2 to 4.7 per cent in Estonia and from 6.9 to 7.3 per cent in Hungary. This role of the agriculture, however, which consists of absorbing temporarily a part of the redundant workforce released by the other sectors in times of crisis, is evident in some old member states too, especially those in trouble. Between 2009 and 2012, the above share rose from 4.5 to 5.7 per cent in Ireland and from 11.6 to 12.9 per cent in Greece.⁵⁸

If there is anything like a trend in post-accession development of NMS agriculture, it is the concentration of production in ever fewer hands, i.e. the considerable decrease in the number and a parallel increase in the size of farms. However, as the follow-up of these developments is closely dependent on agricultural surveys and censuses undertaken only every five to ten years, data are available only until 2010. Based on this data, land concentration in the EU10 accelerated between 2005 and 2010. But, as the same thing took place in the EU15, the difference in economic size of average farms between the old and the new member states measured in standard output (SO) – a currently used indicator to determine the scale of production – still increased in absolute terms and remained approximately of the same magnitude in relative terms (see Table 1). Aggregates, however, hide huge differences between countries: average holdings in Slovakia and the Czech Republic are much bigger than in EU15, and Estonian farms are already comparable in size to those in Ireland or Italy; holdings of the other new members are far smaller, especially in Romania. In relative terms, first compared to themselves, in six countries out of the EU10, the economic size of average farms increased at a very high speed (the SO growing by between 1.6 and 3.7 times); among the laggards there were Hungary, Romania, Slovenia and Lithuania. Now, compared to the EU15, almost the same findings could be established, with one more remark: a lot depended on the starting point. Bulgaria, for example, who made a big step towards a more concentrated farm structure, could not reduce its handicap vis-à-vis the EU15 considerably. Hungary advanced very slowly, much more slowly than most of the EU7 on average or its Visegrád partners, countries most suitable for comparison.⁵⁹

⁵⁶ The estimated share for Bulgaria and Romania is a bit higher, around 5-6% of their GVA. (Source: Eurostat)

⁵⁷ European Commission (2014) p. 2 – Bulgaria

⁵⁸ European Commission (web)

⁵⁹ It is to be added that behind the data showing huge concentration in some of the NMS from 2005 to 2010, there is a sharp reduction in the number of farms, which in turn is at least partly due to methodological changes in the Farm Structure Survey. (Source: European Commission 2014, p. 3)

Table 1: Dynamics of standard outputs in agriculture of the new member states and their relative size compared to those of the EU15's

	2005	2010	2005	2010	Change in the handicap vis-à-vis EU15 (2005-2010)
	euro/holding		percent		
EU15	42 158	50 075	100.0	100.0	
CzechRepublic	88 711	170 603	210.4	340.7	-118.0
Estonia	17 431	30 554	41.3	61.0	-33.5
Latvia	4 565	9 356	10.8	18.7	-8.8
Lithuania	6 131	7 645	14.5	15.3	-0.9
Poland	6 523	12 669	15.5	25.3	-11.6
Slovenia	10 809	12 264	25.6	24.5	1.5
Slovakia	19 910	72 977	47.2	145.7	-186.7
NMS (2004)	7 976	13 637	18.9	27.2	-10.3
EU7	8 012	14 770	19.0	29.5	-13.0
Hungary	7 431	9 814	17.6	19.6	-2.4
EU8	7 909	13 692	18.8	27.3	-10.6
Romania	2 552	2 798	6.1	5.6	0.5
Bulgaria	4 459	7 099	10.6	14.2	-4.0
EU10	5 054	7 125	12.0	14.2	-2.6

Source: Eurostat

Production

When it comes to measuring the EU10 performance in agricultural production, there are two methods; it is possible to adopt an "in-kind" or a value approach. As for the first option – because taking into account the differences stemming from cultural, climatic and other factors – would require far too much time and space, this study will mainly use the second one. Out of the indices of production, temporal changes of two of them (agricultural output and gross value added) are shown in Table 2 and 3.

In preparing the tables, the period of 2002-2013 was divided into four sections of equal length, and then the second, third and fourth three-year sub-periods were compared with the first one, that of 2002-2004. The latter can be seen as representing the last couple of years when the EU accession (and CAP subsidies) could not have a significant impact yet. Considering the weather exposure of the agriculture and trying to avoid distortions arising from comparing single years with each other, the use of 3-year averages seemed to be a reasonable solution.⁶⁰

⁶⁰ Data for Romania and Bulgaria – and thus also for EU10 – are for reference purposes only, as their accession came 3 years later (in 2007). Naturally, one could compare the first six years (i.e. the first and the second three-year cycles) of their membership with that of the other countries entering the EU in 2004. This would show that their production grew slower than that of the Baltics and Poland, but faster than that of the rest of the NMS, and that their performance in crop production was much better than in animal husbandry. However, such comparison would not be adequate, as agricultural production – in contrast to the industrial production – is highly dependent on external factors, like weather. Thus, differences in speed of development stem not only from differences in performances but also from differences in weather conditions of the subsequent years.

Table 2: Changes in agricultural output and GVA based on 3-year averages (2002-2004 = 100%)

	Output				Gross value added			
	2005-07/ 2002-04	2008-10/ 2002-04	2011-13/ 2002-04	2011-13 average	2005-07/ 2002-04	2008-10/ 2002-04	2011-13/ 2002-04	2011-13 average
	percent			m. euro	percent			m. euro
EU15	115.2	127.0	147.6	4 866	104.7	95.4	134.7	1 377
CzechRepublic	134.2	141.1	191.7	863	138.7	115.3	178.7	326
Estonia	143.7	154.2	196.0	848	128.8	102.4	112.3	193
Latvia	140.2	163.8	225.6	2 852	147.8	152.2	247.4	1 075
Lithuania	130.5	150.1	175.1	22 970	139.9	149.4	181.3	9 036
Poland	104.2	107.1	113.6	1 185	99.8	87.6	91.0	418
Slovenia	106.1	118.1	134.4	2 313	98.6	86.1	109.0	547
Slovakia	98.3	103.3	115.8	337 213	89.6	85.1	92.8	133 664
NMS (2004)	120.2	134.1	157.5	44 348	123.5	124.3	156.5	16 103
EU7	115.7	137.6	163.9	35 895	130.4	132.9	167.2	12 972
Hungary	103.2	108.6	125.5	7 632	105.4	100.2	129.6	2 735
EU8	120.8	135.0	158.8	43 527	125.1	125.9	159.2	15 707
Romania	120.3	138.0	146.6	16 873	107.8	118.3	122.6	7 376
Bulgaria	97.7	116.9	122.4	4 233	89.9	96.0	100.1	1 578
EU10	118.8	134.3	152.6	64 634	115.9	120.6	141.3	24 661

Note: Output of the agricultural industry is made up of the sum of the output of agricultural products, agricultural services and of the goods and services produced in inseparable non-agricultural secondary activities. Gross value added corresponds to the value of output less the value of intermediate consumption. The basic price is defined as the price received by the producer, after deduction of all taxes on products but including all subsidies on products.

Source: Eurostat

As for Table 2, let me make some general remarks – true for most of the examined period – regarding both of the indices (output and GVA). First, the EU10 as a group, and each of its constituent countries grew faster than the average of the EU15. The best performance was recorded by Poland and the Baltic states (except for Latvia for the GVA). They were followed by a sort of middle of the rank, with the only “rule” being that Romania and the Czech Republic appeared mainly in the upper section, while Slovakia and Bulgaria in the lower one. Hungary’s performance has been mixed: by its output in general and its performance during the first six years in particular, it clearly ranked among the worst performing countries; but, by its GVA, especially for the last three-year sub-period, it managed to climb the ladder higher up.

Of course, at least part of the above phenomena may be explained by some quite banal reasons. For example, the less developed a country is, the faster it can grow and *vice versa*. Indeed, measured in GDP per capita in PPS, the Baltics (but also Poland) started their development within the EU from a very low level (from between 44-55% of the EU28 average), at least from a much lower level than e.g. Slovenia (84%), the Czech Republic (77%) or Hungary (63%) did.⁶¹ Also, their agricultural sector especially that of the Baltics, provided very low yields before accession. So, the least one can say is that they had room for improvement. At the other end of the ranking, one can find the small but very developed Slovenia, the only one in the EU10 whose agricultural performance in the last nine years was even worse than that of the EU15 on average. As a matter of fact, its agriculture, at the moment of EU accession, was undoubtedly at the highest level among candidate countries. The amount of its per hectare direct payments, a mirror of historical production patterns, is not only above both

⁶¹ See <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00114>

new and old member states' average, but also above that of France and Germany.⁶² Also Slovenia is the only one to have adopted the SPS (or Single Payment Scheme) regime in 2007 – a compulsory system for distributing direct payments in EU15 introduced with CAP reform 2003. So, regarding this element of the CAP, it is Slovene farmers – alone in EU10 – who since 2007 have been getting access to direct payments on entirely equal footing with their colleagues from EU15.⁶³

Table 3: Changes in crop and animal output based on 3-year averages (2002-2004 = 100%)

	Crop output				Animal output			
	2005-07/ 2002-04	2008-10/ 2002-04	2011-13/ 2002-04	2011-13 average	2005-07/ 2002-04	2008-10/ 2002-04	2011-13/ 2002-04	2011-13 average
	percent			m. euro	percent			m. euro
CzechRepublic	116.1	133.6	171.8	2 868	111.0	116.8	117.1	1 779
Estonia	145.8	145.8	219.4	377	125.6	135.5	172.3	400
Latvia	151.3	173.3	231.8	451	137.2	148.4	177.2	317
Lithuania	133.2	166.6	255.1	1 687	140.5	142.1	168.1	946
Poland	130.4	154.7	181.8	11 821	132.9	148.1	172.5	10 512
Slovenia	107.1	113.0	122.4	627	100.9	100.5	104.5	537
Slovakia	111.3	126.0	159.4	1 192	102.7	112.0	112.9	893
EU15	95.3	100.1	109.6	169 558	100.4	104.4	120.7	141 119
NMS (2004)	122.7	140.9	171.6	23 927	118.6	128.5	145.2	17 486
EU7	126.4	148.2	181.9	19 024	125.8	137.3	155.5	15 384
Hungary	112.1	120.5	143.6	4 502	92.5	95.8	108.0	2 584
EU8	123.1	141.8	173.0	23 526	119.3	129.2	146.3	17 969
Romania	114.2	141.1	154.7	11 392	111.9	106.1	105.2	4 006
Bulgaria	97.9	131.6	149.3	2 518	105.8	109.9	107.0	1 175
EU10	118.3	140.8	165.3	37 437	116.8	122.9	134.7	23 150

Source: Eurostat

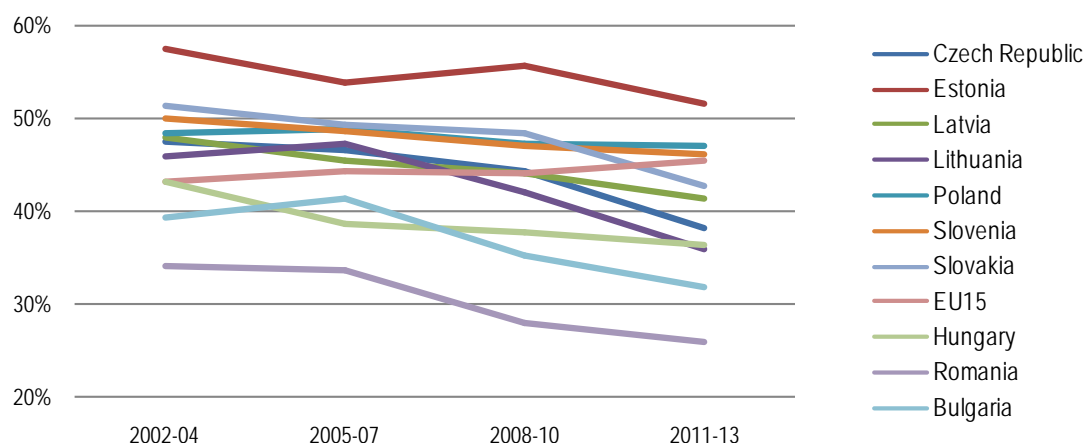
From Table 3, where data for agricultural output are split into two parts distinguishing between crop and animal husbandry, one can reach similar conclusions to those drawn from Table 2. Here too, the best performers are Poland and the Baltics, but their advantage over the others is much less pronounced in crop than in animal products. Another similarity with Table 2 is that EU15's development is slower than that of the new members on average, no matter what their composition is (i.e. NMS, EU7, EU8, EU10 or else). Finally, Hungary is again among the worst performers: even in its best period (i.e. the years of 2011-2013), the pace of its development is half of the EU7's for the crop and only one-seventh of it for the animal output. Nevertheless, there is an important trend which can be discerned from the data of Table 3: although the speed of development is relatively slower in the EU15, this latter is the only group of countries where the growth of animal output exceeds that of crop output. In other words, while in each new member state the proportion of crop and animal husbandry has gradually been shifting towards the former, in the old member states exactly the opposite has been taking place (see Figure 1). Among the EU10 countries only Poland was able to keep the importance of the animal sector at its pre-accession level (a loss of 1.3 percentage point only). As for the other new members, Slovenia has performed relatively well

⁶² See Council of the European Union (2011) and Figure 1 at the final chapter

⁶³ See Potočník – Lombardero (2004) p. 379

(-3.9 pp) and in Estonia, in spite of a quite significant decline in share (-6.0 pp), animal husbandry remained more important than crop production. In the rest of the EU10, the animal sector lost between 6.6 and 10.1 percentage points.

Figure 1: Changes in proportion of animal output, 3-year averages
agricultural output = 100%



Source: Eurostat

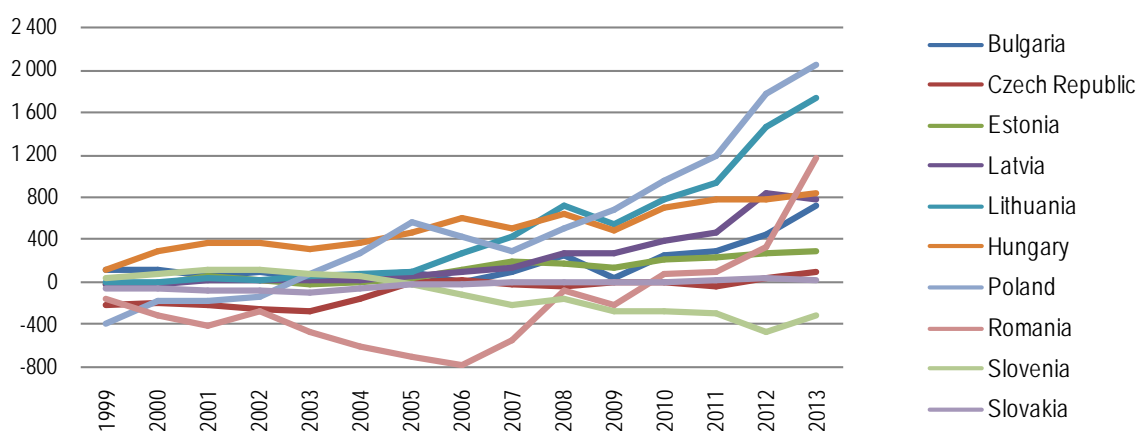
As for the relative importance of the speed of development, it is to be clearly understood that although the EU10 crop production has developed seven times faster than that of the EU15, in reality, there was no difference in the amount of increase (approx. EUR 15 billion from 2002/04 to 2011/13). As for the animal output, the ratio of the speed of development was less significant (only 1:1.7 in favour of EU10), but in value the EU15 progressed by EUR 24 billion against a mere 6 billion achieved by the EU10. It is to be noted that this progression of EUR 24 billion was higher than the average annual animal output in the EU10 at the end of the period (i.e. in 2011/13). Table 3 and Figure 1 already foreshadow the events that took place in intra-EU trade for the last one and a half decade, enabling the old member states to take full advantage of the opportunities brought about by the Eastern enlargements to find new markets for their highly competitive animal sector.

Trade developments

Statistical data on international trade are to be treated and interpreted very cautiously; this is the main conclusion drawn after thoroughly examining several trade reports and statistical data sets on agrifood trade within and outside the European Union. Frequent changes in methodology and consecutive data refreshments can cause comprehensive reviews to become obsolete within a very short lapse of time. Not to mention that the hidden economy, which in the EU10 is likely to have larger dimensions than in the EU15, may cause severe bias in trade statistics and evaluations. Bearing all the above in mind, the best solution seems to be to focus on those key phenomena and trends that are supported by most of the sources.⁶⁴

⁶⁴ See e.g. Carraresi – Banterle (2013) or Csáki – Jámor (2013)

Figure 2: Balance of extra EU27 trade of food, drinks and tobacco
million euro



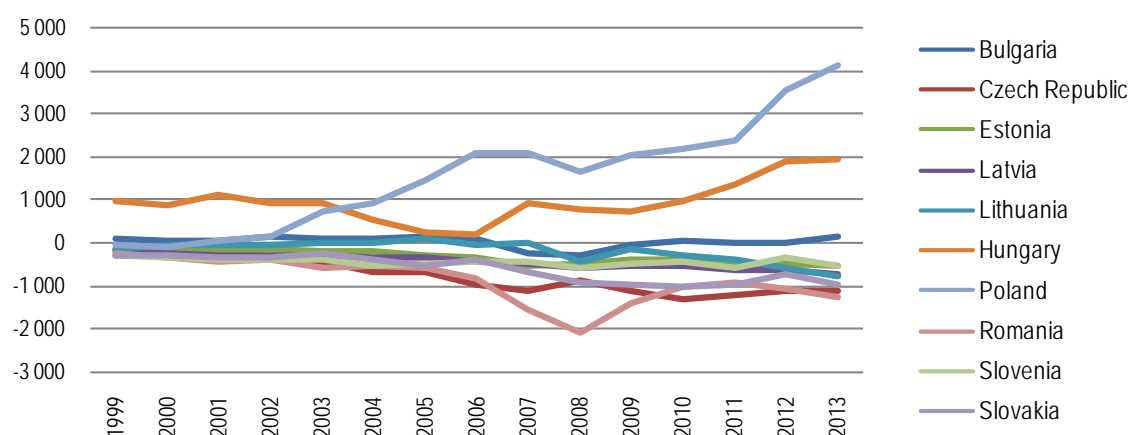
Source: Eurostat

In the assessment of the European Commission released in April 2014 evaluating the first 10 years of the 2004 enlargement, there are a number of findings on the trade aspects of NMS' agricultural accession⁶⁵ that could also have been reported almost unchanged on those of the EU10s'. One of such findings is associated with the increased demand for NMS products, stemming from the free access of these countries to the Single Market and driving the growth in competitiveness with economies of scale, which made their exports outside the EU more competitive. The report also states that agricultural exports to third countries have grown even faster than to the EU15. As a matter of fact, the extra EU exports of EU10 are on a constant uptrend for the last 10 or even 14 years for some countries like Poland or Hungary (See Figure 2).⁶⁶ Except for Slovenia, all the other EU10 have achieved a positive balance in agrifood trade with extra-EU countries and the slope of the upward trends became even steeper from the outbreak of the global crisis. So, apparently, these countries have managed to increase their competitiveness outside the EU, due most probably to both rising access to CAP subsidies and their utilisation (like e.g. investing into farm modernisation). However, it appears that even increasing CAP support cannot help all EU10 farmers to overcome the competitive disadvantage they have to operate at, vis-à-vis their EU15 counterparts. Their handicap results from the accumulation and capitalisation in buildings, machinery, equipment and livestock of those subsidies the West European farmers benefited from for long decades and continue to benefit from. At least this is the conclusion one can draw looking at intra EU27 trade developments (see Figure 3).

⁶⁵ European Commission (2014) p. 9

⁶⁶ As liberalization of agrifood trade between the EU and the candidate countries significantly accelerated in the years preceding their accession, it seemed a reasonable choice to collect and analyse statistics from as far back as the late 1990s.

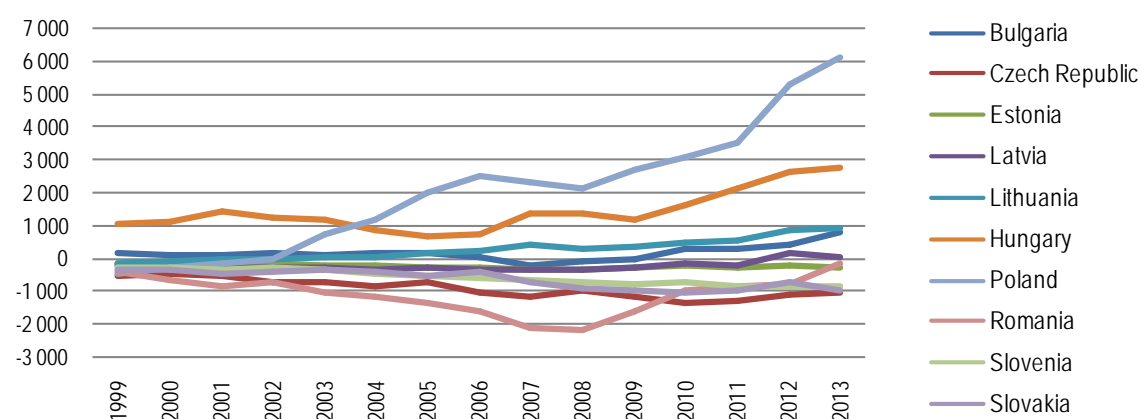
Figure 3: Balance of intra EU27 trade of food, drinks and tobacco
million euro



Source: Eurostat

The only country that could undoubtedly make full use of its EU accession and ensure an almost continuous improvement of its intra EU trade balance was Poland. All the other EU10 countries, with the exception of Lithuania until 2006, have seen their balances, at least temporarily, deteriorating through the process of mutual liberalisation of agrifood trade with the group of EU15. Most of them – i.e. the three Baltics, the Czech Republic, Slovakia, Slovenia and Romania – ended up with much bigger deficit than initially. Bulgaria returned to the same near equilibrium position of its trade balance it had before having entered the EU, while Hungary managed to overcome the initial difficulties and became the second best performer behind Poland. Finally, one more observation in connection to Figure 3: two countries with excellent natural endowments for agriculture, namely Romania and Hungary, had experienced important deterioration in their respective intra EU trade balance during the first years after accession. This similarity may clearly indicate errors committed during their preparation for membership.⁶⁷

Figure 4: Balance of intra and extra EU trade of food, drinks and tobacco
million euro



Source: Eurostat

⁶⁷ Other scholars reached a similar conclusion, too. In a study, they go so far as to claiming that in some of the new member states (like in Romania and Hungary) "the majority of farmers were not prepared for the accession". (See Csáki and Jámor 2013, p. 47)

When it comes to adding up the results of extra and intra EU27 agrifood trade (see Figure 4), one cannot but refer to another finding of the aforementioned assessment of the Commission, whereby fast rising exports (i.e. exports rising faster than imports) transformed the NMS from a net importer to a net exporter.⁶⁸ Of course, this statement is true for NMS as a group only, because there are many differences within the group. The EU10 as a group could report positive trade balance only in the last few years. Data for the period from 1999 to 2009 reflect a rather uneven development, when the EU10 cumulative deficit fluctuated between EUR 509 and 1,644 million. Since 2009/2010, however, due mainly to a skyrocketing improvement in the performance of the three main producer countries (i.e. that of Poland, Romania and Hungary), the EU10 agrifood trade deficit has turned into a growing surplus.

Taking the new member states individually, one can find out that only four of the EU10 countries (namely Poland, Hungary, Lithuania and Bulgaria) kept scoring mostly positive balance during the examined years. They were joined by Latvia at the very end of the period. As for the remaining five countries, none of them could report a trade surplus since 1999. Three of them saw their performance worsening, their deficit doubling (for the Czech Republic) or even tripling (for Slovakia and Slovenia) between 1999 and 2013. The deficit of Estonia was stagnating for the whole period, while that of Romania, after having taken an immense roundabout way towards the low negative range, returned to more or less the same level it had started from (see Figure 4).

If one returns now to the EU10 as a group and takes a closer look at its exports and imports growth rates, one finds the following. Exports really did grow faster than imports, taking either the period between 1999 and 2013 or that from 2004 to 2013. Also did the growth rate of both exports and imports exceed those of the old member states. However, despite the much faster increase of exports of EU10 than of EU15, as the initial positions were extremely different, the extra exports of the EU15 represent several times that of the EU10 (see Table 4). The same logic holds true for the difference between exports and imports growth.

Table 4: Changes in absolute and relative terms in trade of food, drinks and tobacco

	Export (Bn. euro)			2013/1999		2013/2004		Extra export minus extra import (Bn. euro)	
	1999	2004	2013	1999=100	Bn. euro	2004=100	Bn. euro	2013/1999	2013/2004
EU10	7.04	13.07	49.12	6.97	42.08	3.76	36.05	8.74	8.65
EU15	171.24	211.33	349.90	2.04	178.66	1.66	138.57	15.20	16.41

	Import (Bn. euro)			2013/1999		2013/2004		Growth diff. in pp. btw. export + import	
	1999	2004	2013	1999=100	Bn. euro	2004=100	Bn. euro	2013/1999	2013/2004
EU10	8.23	14.16	41.56	5.05	33.34	2.93	27.40	192.00	82.30
EU15	175.66	216.96	339.12	1.93	163.46	1.56	122.16	11.30	9.30

Source: Eurostat

Of course, taken individually, the member states show huge differences regarding the speed of growth of their agrifood exports and imports. The fastest increase in exports was achieved by the two less developed Baltic States (i.e. Latvia and Lithuania) and Romania, while in imports the afore-mentioned two Baltic States were 'accompanied' by Bulgaria. Among the countries showing the slowest progress one can find Hungary (with the

⁶⁸ European Commission (2014) p. 9

worst performance in three out of the possible four cases), the Czech Republic, Estonia and, for the period of 1999-2013, Slovenia (see Table 5). Naturally, one has to take into account that the value of agrifood trade of these countries was still rather insignificant compared with that of the EU15's, both in 1999 and 2004. In current prices, EU15 agrifood exports were 24 and 16 times, their imports 21 and 15 times larger than the EU10's, in 1999 and 2004 respectively.

Table 5: Speed of growth in trade of food, drinks & tobacco*

2013/1999	Exports or Imports of year 2013 compared to Exports or Imports of year 1999										
	BG	CZ	EE	LV	LT	HU	PL	RO	SI	SK	EU10
Exports	6.20	5.70	7.04	21.86	15.11	3.55	8.16	14.11	4.47	7.40	6.97
Imports	7.82	4.34	4.33	6.41	7.82	4.90	4.56	6.24	3.88	5.31	5.05

2013/2004	Exports or Imports of year 2013 compared to Exports or Imports of year 2004										
	BG	CZ	EE	LV	LT	HU	PL	RO	SI	SK	EU10
Exports	4.17	2.96	3.40	7.50	5.33	2.48	3.74	9.69	3.80	3.50	3.76
Imports	3.84	2.39	2.51	3.45	4.54	2.16	3.29	2.77	2.70	3.06	2.93

*The times the trade was increased; fastest growing countries in green, laggards in red

Source: Eurostat

Measured in per capita terms, the value of exports of the EU10 was a mere one-seventh and one-fourth, that of the imports one-sixth and one-fourth of that of the EU15, for the above mentioned two years.⁶⁹ But, averages mask huge differences. In 1999, per capita values of exports ranged between EUR 13 (for Romania) and EUR 186 (for Hungary); that of imports between EUR 31 (for Romania) and EUR 286 (for Slovenia). The average values of the EU15: EUR 455 and EUR 467 respectively. In fact, there was enough room for trade to develop substantially. Therefore, when contemplating Table 6 which compares exports and imports growth rates to each other, such indices above 2 or even 3 (in case of Latvia and Romania) need to be properly evaluated, bearing in mind what level these countries' indices started from.

Table 6: Speed of growth in trade of food, drinks and tobacco*

	Exports of year 2013/exports of year 1999 or 2004/ Imports of year 2013/imports of year 1999 or 2004										
	BG	CZ	EE	LV	LT	HU	PL	RO	SI	SK	EU10
2013/1999	0.79	1.31	1.63	3.41	1.93	0.72	1.79	2.26	1.15	1.39	1.38
2013/2004	1.09	1.24	1.37	2.17	1.17	1.15	1.14	3.49	1.40	1.14	1.28

	Exports of year 2013/exports of year 1999 or 2004/ Imports of year 2013/imports of year 1999 or 2004										
	BE	DK	DE	IE	ES	FR	IT	NL	AT	UK	EU15
2013/1999	1.02	0.80	1.45	0.70	1.24	0.90	1.23	0.95	1.20	0.84	1.06
2013/2004	0.99	0.87	1.19	0.80	1.28	0.97	1.21	0.94	0.98	1.00	1.06

*The times exports increased faster than imports; exports grew faster than imports if the index > 1

Source: Eurostat

⁶⁹ These values reached 56% for exports and 49% for imports by 2013. (Source: Eurostat)

One more aspect of EU10 agrifood trade developments is worth mentioning if one wants to have a clear picture about where these countries started from and where they arrived to. By considering the 27 EU member states and arranging them in descending order by value of exports and imports, the following picture emerges. As for the exports, in 1999, only a few of the EU10 could rank higher than any of the EU15 countries; most of them ranked at the bottom of the list, doing only better than Cyprus and Malta. By 2013, at first sight significant shifts occurred, as several EU10 countries moved 4-5 or even 7 places upwards on the list. This was the case of Romania, Poland, Latvia and Lithuania. The others remained at the same place or moved at most 2 places up or down. But, if one takes a closer look, it becomes clear that countries of the EU10 mostly outpaced each other. True, most of them did already better than Luxemburg or Finland, and some of them did better than Greece or Portugal. But, regarding the places they occupied in the rankings in 1999 and 2013, it turns out that, if we eliminate Poland, the other 9 countries of the EU10 ranked from 14th to 26th places in 1999 and from 13th to 24th in 2013. Something similar happened in the case of imports, but with somewhat smaller upwards moves and nine of the EU10 ranking from 16th to 26th places in 1999 moved to 14th to 25th in 2013. Poland was the only one who really made a qualitative change and left behind the other EU10 countries; ranking 8th place for both exports and imports, it outpaced such major agrifood traders as Denmark, Ireland or Austria. In 2013, Poland ranked 4th for its agrifood trade surplus (EUR 6.2 billion) behind the Netherlands (22.5), France (11.7) and Spain (8.9), here too outpacing such big traders as Denmark (5.4), Belgium (4.3) or Ireland (3.0). In this list Hungary ranks 8th with a surplus of EUR 2.78 billion, way ahead of Lithuania (0.95) and Bulgaria (0.83).

Despite the differences in revealed trade performance, there is a consensus among experts that the EU10 countries, in general, have profited from their accession to the European Union, as they have been able to increase their trade flows and took advantage of the expansion of the free trade area.⁷⁰ And so did the old member states. By taking advantage of the strength of their economies and making full use of the mutual market liberalisation, the EU15 suppliers were able – despite the tariff barrier decrease asymmetry favouring the EU10 or even without any preferences – to increase their deliveries to the new member states considerably already prior to enlargement.⁷¹ Among the winners of this process Germany should be mentioned first, but Austria as well – due to their very competitive food industry – and some other countries (like e.g. Italy and Spain, see Table 6).

The fact that Poland stands out so much by its trade performance of the group of the EU10, while Romania in spite of its second place within the EU10 for both agricultural output and GVA (see Table 2) is lagging behind – not only behind Poland but also behind Hungary, the Czech republic and Lithuania – draws the attention to an important issue. In the mentioned Commission paper, there is a key statement on NMS trade profile being similar to that of the EU15. According to the Commission, as a result of the ten-year membership, two-thirds of the NMS trade consists of final goods with higher value indicating that the food industry had already caught up with its EU15 counterparts.⁷² This statement may be true for the NMS (2004), but the situation becomes different for the EU10, with Romania and Bulgaria. In their case, the share of final goods in total agrifood trade was about 60 per cent for imports and only 30 per cent for exports in 2013.⁷³ This explains why Romania's trade performance is so much poorer than its output and why it is lagging far more behind Poland in exports than in production. It is the structure of the exports that matters, and in this regards, the two Balkan countries have a lot to do if they want to

⁷⁰ See: Carraresi – Banterle (2013) p. 7 or Csáki – Jámor (2013) p. 45.

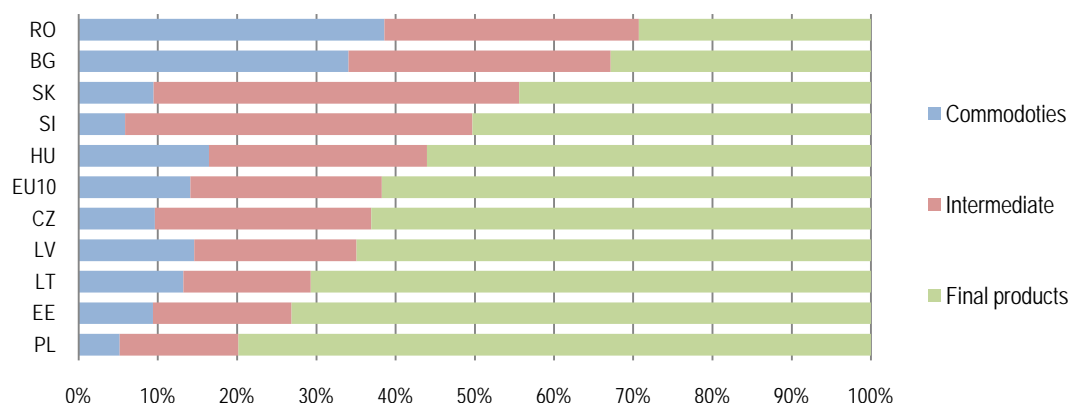
⁷¹ Juhász (2009) p. 7 and p. 114

⁷² European Commission (2014) p. 9

⁷³ In 2013, 86.5% of EU10 agrifood imports had their origin in EU, and as most of them came from the EU15 or from Western multinationals implanted in EU10, the share of final goods was relatively high, and for this aspect without much difference all over the EU10. As for the exports, they are much less homogenous as for their destination, and their structure also vary a lot from country to country. (Source: Eurostat)

catch up with their EU10 rivals (see Figure 5). Of course, the structure of exports is highly dependent on the structure of production, and thus we are back to where we started: pointing at the disastrous shift in agricultural production from a balanced structure towards a more extensive one, with more crop growing and less animal breeding (see Figure 1). In this field, although Romania is in the worst and Bulgaria in the second worst position, it is to remember that Hungary, Lithuania as well as the Czech Republic have recently seen their livestock decrease to a dangerously low level, too.

Figure 5: Structure of the agrifood exports by category of product



Source: Eurostat

Reasons behind changes – with some focus on Hungary

In this chapter, when assessing the whys of the above described production and trade patterns, a clear distinction will be made between the circumstances that affected all EU10 countries and those that resulted from the specific development of Hungary. Let us start with the former ones. As already mentioned, the application of a ten-year transitional period in the new member states – with gradual phasing-in of CAP direct payments, but provisions for an immediate and reciprocal market opening at the moment of enlargement – put an enormous competitive pressure on farmers and the whole agrifood business across the EU10.

A second challenge for the new entrants was the adoption of an extraordinary CAP reform in 2003, just before the Eastern enlargement took place, and in the elaboration of which the new members had no say. In practice, in the EU there are two different support systems in force: one for the old member states (plus Slovenia and Malta, the only NMS able to implement the new support scheme) with more room to differentiate the support by farm or by region; and another one for the new member states where such a possibility is nonexistent.

Finally, a third factor in connection with the difficult (if not unequal) competitive environments for EU10 farmers: in any case, when normative CAP rules would be “too” beneficial for some of the new member states (or too costly for the common budget) the old members (most of them being net contributors to the budget) act immediately and change the rule. Already, when preparing the 2003 CAP reform, the Commission feared that coupled direct payments would attract the conversion of more arable land into rye area and/or encourage a shift from potatoes to rye in the new member states (especially in Poland), thus proposed the abolition of rye intervention.⁷⁴ Similarly,

⁷⁴ European Commission (2002) p. 7 and (2003) p. 60

soon after the enlargement when, thanks to successive good harvests, the European intervention stock of maize increased to 40 per cent of that of cereals (and of which 93 per cent were stored in Hungary), the Commission did not hesitate to propose an end to public intervention for maize⁷⁵. Hungarian farmers were pointed at and blamed for having an interest in selling into intervention rather than trying to export⁷⁶. No time was given them to adapt to their new environment.

Table 7: Changes in agricultural output and GVA
Euro per hectare

	Output			Gross value added		
	2005	2007	2010	2005	2007	2010
Czech Republic	907	1 205	1 114	281	343	277
Estonia	655	771	710	263	337	250
Latvia	325	419	370	116	139	92
Lithuania	582	784	745	216	290	237
Poland	907	1 264	1 263	413	539	537
Slovenia	2 199	2 306	2 298	989	879	848
Slovakia	869	944	995	239	272	191
EU15	2 242	2 432	2 399	1 035	1 080	996
NMS (2004)	947	1 201	1 154	383	464	422
EU7	847	1 132	1 105	348	442	409
Hungary	1 413	1 504	1 284	519	538	422
EU8	927	1 183	1 133	372	455	411
Romania	826	984	1 142	445	454	495
Bulgaria	1 231	1 087	854	566	402	303
EU10	915	1 119	1 109	405	451	424

Source: Eurostat

Apart from the aforementioned unequal competitive market positions generated by the differing subsidisation level in the EU15 and the EU10 and explaining mostly differences in performance between these two country groups, there are other factors that explain differences among the EU10 themselves. Naturally, a lot depended on the initial conditions (like natural and capital endowments) that prevailed at the time of accession. In this respect, one has to remember that Slovenia by far had (and still has) the most developed agricultural sector among EU10 countries which is reflected in data on per hectare value of output and gross value added (see Table 7). Although since 2009, the agribusiness of the country has been severely suffering from the unfavourable macroeconomic situation (see Figure 6), the Slovene agricultural performance is virtually standing alone within the EU10 being the only one to be compared with that of the EU15.

An important element of initial conditions is related to the difference in farm structure. In most of the EU10 countries, there was a dual farm structure at the time of accession; with a large number of small plots, too small to be viable and competitive on the Single market, and a relatively small number of very large entities, a sort of heritage of the collective farming system with some embedded inefficiencies. Only Poland and Slovenia were characterised by a European type farming system with small and lower middle family businesses, which proved to

⁷⁵ European Commission (2006)

⁷⁶ European Parliament (2007)

be beneficial. It is not only that countries with farm structures similar to those in the EU founding countries can more easily take advantage of the CAP regime than the others; but there are opinions stating that in Europe the best framework for animal breeding is provided for by family farms of appropriate size. In the latter, it is still possible to deal with the animals individually, while risks (like diseases) and tasks (e.g. manure treatment) arising from keeping too many animals in too small places are not significant yet.⁷⁷

Also, the EU10 agriculture had been strongly influenced by the policy framework prevailing in the pre-accession period. Farmers in countries with initially high and uneven price and market support (e.g. Hungary and Romania) are considered to have lost with accession as it hardly brought any price increase for them. On the other hand, farmers in countries (like in Poland) where prices remained low before accession have gained. As for land policies, according to whether being restrictive (e.g. in Hungary) or liberal (like in the Baltics), they hampered or helped the agricultural sector to attract capital from inside or outside the sector.⁷⁸

Regarding the specialties of the Hungarian agriculture, one general remark has to be made. A basic feature of the transition process that made the difference with its main rivals was that in no other candidate country had there been so much struggle against a functioning sector of the economy in order to redistribute its capital goods, subsidies, political power and other positions of influence than in Hungary.⁷⁹ Privatization, restitution (of lands to former owners) and land laws (restricting land ownership to domestic physical persons) destroyed the confidence in the countryside, increased instability in land ownership, led to irresponsible land use and inhibited long-term investments.⁸⁰

The competitiveness of the Hungarian livestock production has never been very high. Its natural endowments (lack of enough rainfall, hence lack of enough pastures and meadows) put the country at a competitive disadvantage against its neighbours or the Western European countries. In pre-transition times, the low profitability (or even the deficit) of the animal husbandry was hidden (and cross-financed) from the excellent profit of the auxiliary activities of the cooperatives.⁸¹ Then, the shock of the transition and the EU accession ran, in two waves, down the sector to its competitive core. Since the EU accession alone, nearly four thousand commercial livestock farms have shut down in Hungary. In addition, there still exists the problem of low profitability, especially for pig and poultry breeding, the latter showing much better ability to react to market changes than the former.

The decline of animal husbandry has serious consequences for the entire agricultural sector. As the total number of livestock units in Hungary dropped to less than half of what it was in the mid-1980s⁸², the lack of enough natural manure makes it more and more difficult to improve the quality of the soils, and thereby indirectly renders the fight against drought less efficient.⁸³

⁷⁷ Pouliquen (1995)

⁷⁸ Csáki – Jámor (2013) p. 47

⁷⁹ Varga (2004) p. 24

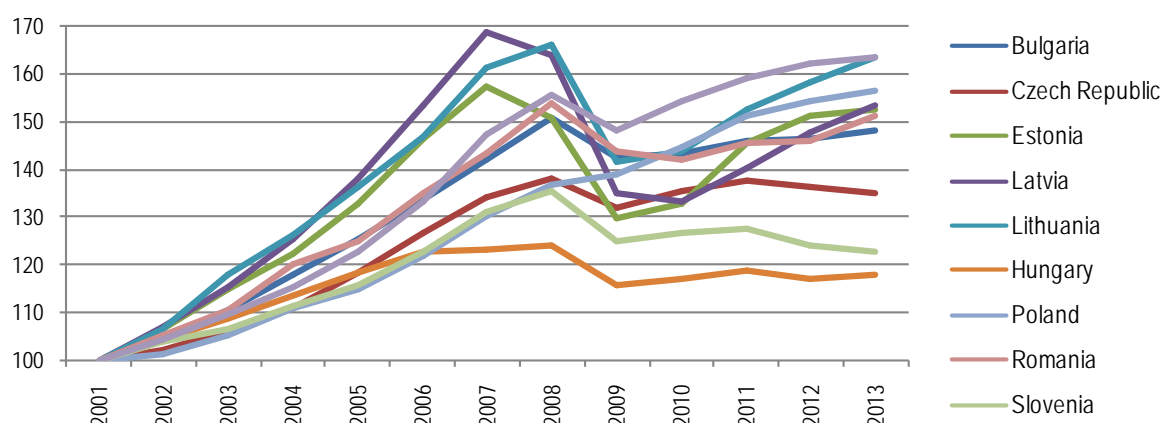
⁸⁰ Juhász (2012)

⁸¹ In the 1970s and 1980s, the Hungarian statistical office (KSH) had not even reported data on the net profitability of the livestock sector. (Szabó – 2014)

⁸² KSH – https://www.ksh.hu/docs/hun/agraar/html/tabl1_5_2_1.html

⁸³ So, the increased volatility in crop yields, reflected in increased volatility in crop production (see Figure 2), comes not only from weather condition (or climate change), but also from the lack of such common element as manure.

Figure 6: Cumulative real GDP growths since 2001



Source: Eurostat

Of course, the performance of the Hungarian agriculture cannot be separated from the broader context of the Hungarian economy. As after 2006 Hungary detached itself from the regional mainstream and has since then followed a much slower path of development than most of its partners in Central Europe (see Figure 6)⁸⁴, the domestic market for agrifood products has also narrowed. In 2011, per capita food consumption was 90 per cent of what it was in the 1980s (see Table 8). The most dramatic decline took place in consumption of animal products, staple food (except for potatoes) and sugar, while major improvement occurred only for foodstuffs (e.g. fish or fruits and vegetables) for which much of the increase was supposed to come from imports (e.g. tropical products).

Table 8: Annual per capita food consumption in Hungary
kg

	Meat	Fish	Milk	Eggs	Fats	Flour, rice	Pota-toes	Sugar, honey	Fruits, vege-tables	Other plant prod.	Total
1980s (A)	76.2	2.4	183.6	18.7	35.0	111.5	56.1	37.2	154.5	4.0	679.0
2011 (B)	55.8	3.6	152.3	12.6	34.4	84.9	63.5	28.4	177.9	4.1	617.5
A/B	137%	66%	121%	148%	102%	131%	88%	131%	87%	98%	110%
B/A	73%	151%	83%	68%	98%	76%	113%	76%	115%	103%	91%

1980s = decade average

Source: KSH⁸⁵

Another factor, which in the course of time, proved to be a further limitation of possibilities for Hungarian agriculture, was the hasted privatisation of the food industry in the 1990s. It took place in two rounds – first the ‘luxury articles’ (sugar, tobacco, beverages and confectionary), then the ‘heavy artillery’ (cereal, milk, meat) – at a

⁸⁴ Something similar happened to Slovenia a couple years later.⁸⁵ http://www.ksh.hu/docs/hun/xstadat/xstadat_hosszu/elm14.html

time when the country was still at the forefront of the transition process in the region. As the old co-operatives were weakened, the farmers were not able to participate in the privatisation adequately, and more than half of the food industry, even entire segments of it, was sold to foreign investors. Later on, as institutions of market economy have been gradually developed in the neighbouring countries, the new foreign owners of the Hungarian food industry started to 'rationalise' (i.e. relocate) their production geographically in the neighbouring region.⁸⁶

Finally, one has to mention the problem of the hidden (or black) economy. Its share in the agriculture and the food industry is estimated to be between 20 and 30 per cent. Relatively high tax burden, weak legal security and mass unemployment provide ideal environment for the hidden economy in Hungary. The complex and discriminatory tax system creates motivation primarily for the small businesses to engage in tax evasion. But in this way, indirectly, larger businesses are also involved. High level of tax evasion in agrifood economy is most harmful as it impedes integration, retards concentration, reduces transparency and discourages farmers to form producer organisations.⁸⁷

A new CAP regime for 2014-2020

January 2014 marked the launch of the new seven-year Multi-annual Financial Framework (MFF 2014-2020) of the EU. One of the most important changes compared to the previous (2007-2013) MFF is the re-designed Common Agricultural Policy (CAP), the reform of which was formally adopted first by the European Parliament (EP) in November and then by the Council of Agriculture Ministers in December 2013. The new CAP relates to five important EP/Council regulations: direct payments, the single common market organisation, rural development and a horizontal regulation for financing, managing and monitoring the CAP. The fifth regulation defines the transitional rules for the year 2014 as, for technical reasons, the direct payments regulation will only apply as of 1 January 2015.

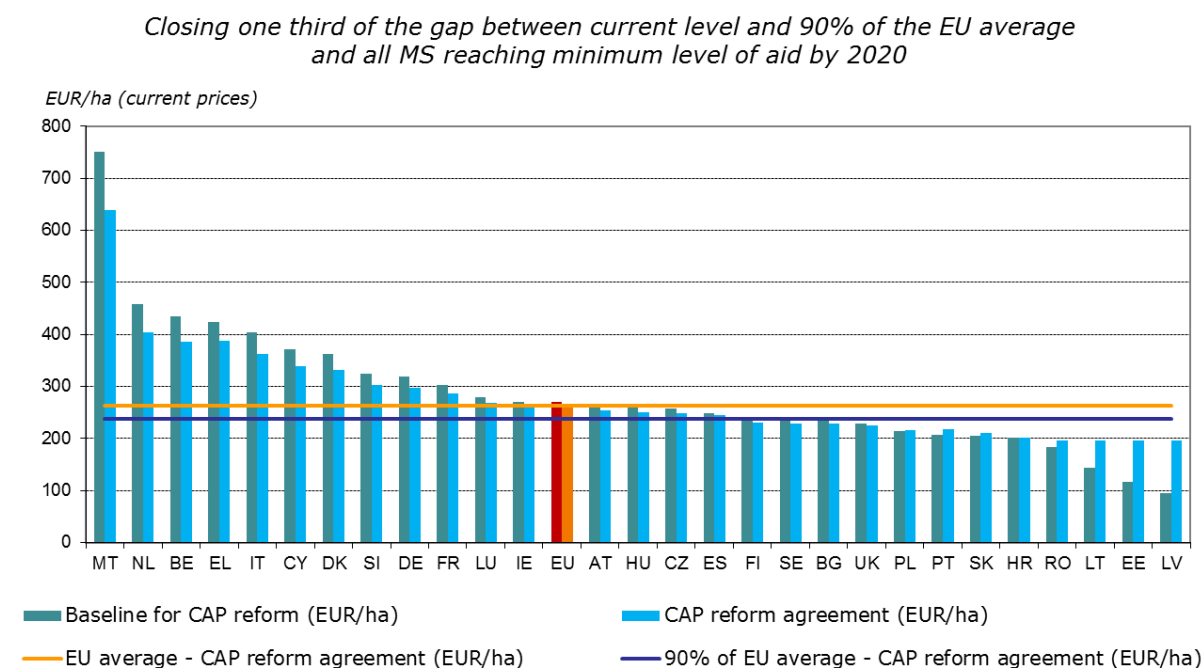
The CAP reform and the overall MFF deal were closely linked together throughout the negotiations. Consequently, when evaluating whether the EU10 countries are losers or winners of the new CAP, it is important to place the problem in the broader context of the MFF package. In this respect, it is interesting to discover that in terms of commitments, the new MFF makes real cuts only for those headings (agricultural and cohesion policies) where the EU10 have traditionally been more successful in obtaining community assistance. On the other hand, funds grow most under those headings (e.g. competitiveness) and sub-headings (e.g. research) where the EU10 starting position to draw on funds has traditionally been less favourable compared to that of the EU15.⁸⁸

⁸⁶ This move gained momentum as the Hungarian economy slowed down after 2006. Between 2003 and 2010, the output of the food industry lost one fifth in volume. Even if a slight recovery has been taking place since then, no clear reversal of the trend can be observed yet. (Potori – 2014)

⁸⁷ There are sectors where the reason why there is no inter-branch organisation is that traders are not interested in transparency. (Potori – Ibid)

⁸⁸ European Commission (web-2)

Figure 7: Redistribution of direct payments



Source: DG Agriculture and Rural Development (2013) p. 30

As direct payments (DPs) make up about 70 percent of CAP budget, at times of bargaining they are always at the centre of attention. Differences in per hectare support – which became more pronounced after the enlargements in 2004 and 2007 – were a subject of constant complaint by the new entrants, especially the three Baltic States and Romania and Bulgaria. Now the new CAP, while cutting back DPs in general, allocates relatively more support for those member states (MS) where per hectare payment is below 90 percent of the EU average. It also guarantees a minimum level of EUR 196 per hectare aid to be reached by 2019 (see Figure 7). These changes are to be financed by members with above EU average DPs per hectare. Thus, in the new CAP there is a modest redistribution of the DPs across (and also within) the MS, a phenomenon called external (and internal) convergence.

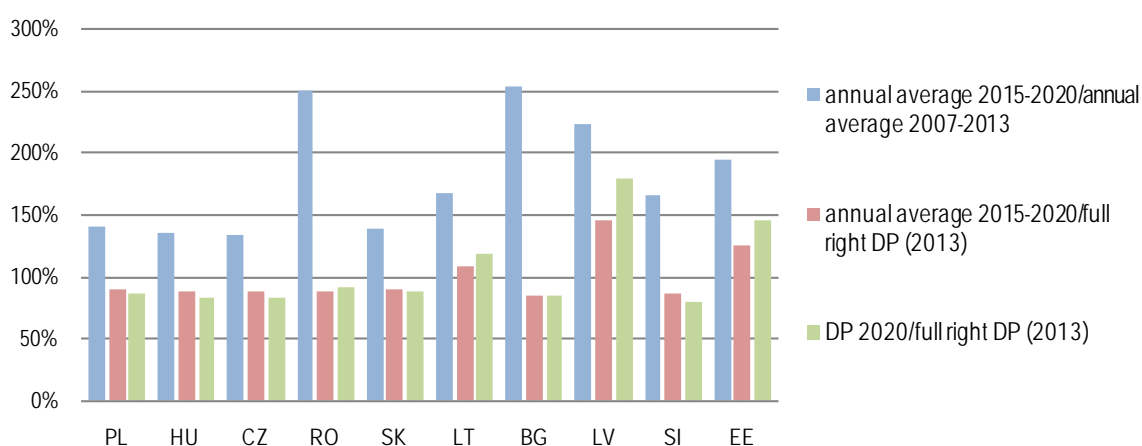
When assessing the impacts of external convergence on the EU10 countries, we have to take into account the following: first, DPs will be put on a strict diet in the next MFF; second, the EU-27 will have to finance DPs for Croatia; and third, external convergence will have to be financed by members with above EU average DPs (i.e. also by Slovenia). If we compare average DPs of the period of 2015-2020 to those of 2013 (see bars in the middle in Figure 8) or the DPs of the end year of the old and the new MFF (see right-side bars in Figure 8), it is clear that in real terms for most of the EU10 DPs will decrease rather than increase. Only the Baltic States (especially Latvia and Estonia) can get access to substantially more support than in the previous period.

Another aspect of the DP regime is related to the already mentioned fact that with the exception of Slovenia and Malta all other NMS apply the simplified Single Area Payment Scheme (SAPS), a flat rate payment per hectare at member state level. Originally, the SAPS was established for five years. However, following the reform of 2008 (the so-called “Health Check”) its application was extended until 2013, and now the new CAP deal changed the end-date to 2020. In the meantime, in the old member states, the Single Payment Scheme (SPS) has been in use

since the 2003 reform. The calculation of the SPS varies from one country to another, and, depending on the model chosen, reflects past performances at individual and/or regional level. As such a differentiation is impossible with the SAPS, the differences in per hectare support between the old and the new members, which are to be decreased by the external convergence (see above), will remain considerable at farm gate level. The so-called internal convergence may, however, be considered as a first step in the right direction as it pushes the countries with historical references to move towards a fairer and more converging per hectare payment at national or regional level.⁸⁹

A third important feature of the new common agricultural policy relates to the fact that it will be anything but common. Although there will be a common framework, because the new regulation makes the whole system largely flexible and renders several main elements optional, in practice 28 different agricultural policies will be implemented. The share of “coupled” payments for example, which are linked to a specific product, may reach as much as 15% of the national envelop and the Commission may approve an even higher rate where justified. In case of general market disturbances the Commission will for all sectors be authorised to take emergency measures. Further flexibilities and options involve the possibility to redistribute payments for the first hectares of the farms, and/or towards small farmers, and/or towards farms situated in less favoured areas and in areas with natural constraints. There is also a possibility to transfer quite important shares (i.e. up to 15-25%) of funds between the two pillars of the CAP.

Figure 8: Evolution of direct payments in real terms (2011 prices) under the new MFF deal (2014-2020) compared with the old one (MFF 2007-2013)



Source: European Commission (web-2)

As for some special issues where the EU10 could have easily been on the loser side (e.g. capping and greening), we must note that the Commission's original proposals were considerably watered down in the final version of the reform. Instead of introducing a compulsory capping – which would have been progressive for farms with DPs more than EUR 150 thousand a year and confiscating above EUR 300 thousand – there will only be a

⁸⁹ The member states have two options: either to achieve a regional/national rate by 2019 or to get individual rates closer to each other by the same date. In the latter case by gradually increasing those under 90% of the average (with the setting up of a minimum level at 60%) to the detriment of those above the average but with possible limitation of individual losses to 30%. (Source: European Commission – 2013a, p. 2)

compulsory “degressivity” and a voluntary “capping”. This, in practice, will take away at least 5% of the DP above EUR 150 thousand (greening not included and with the possibility for the salary costs to be deducted before calculation), which is good news for the biggest farms vis-à-vis the originally envisaged “confiscatory” capping.⁹⁰ As for the greening, two of its three basic practices (crop diversification and ecological focus area) will only be applied above a certain farm size, which is good news for the very small farms. Due to dual farm structures in some EU10 countries – an enduring heritage of the past – very big and very small farms are of quite importance. So, all changes affecting their incomes or costs pose important challenges at the political level.⁹¹

Conclusions

No sector of the economy can cut itself from its broader social and economic surroundings and developments. When trying to assess the causes behind the differences in agriculture development speed in the EU10 countries, one can enumerate several factors: natural and capital endowments, initial positions and structures, pre- and post-accession strategies and policies. But what really counts is the general social and economic framework that can help or hamper the development and modernisation of agriculture. When, on the bases of facts and statistics presented in this study, Poland and Estonia are considered to be the two most successful countries of the region, this statement seems to harmonise with the above theory.

As for Hungary, a combination of inexperience and greed of the new elite resulted in a stagnating economy with low or limited growth prospects. The number of the farms halved since 2000. The sector is becoming more and more specialised and focusing on field crops (mainly wheat, maize, sunflower and colza), while switching away from livestock breeding or other similarly labour-intensive activities like the production of certain vegetables, which are gradually shrinking and/or stagnating at a very low level. One can only hope that generous CAP support will at least be sufficient to prevent the agricultural sector from being further distanced from its main rivals.

⁹⁰ This reduction does not need to apply to members states applying the redistributive payment under which at least 5% of their national envelope is held back for redistribution on the first hectares of all farms. (Source: European Commission – 2013b, p. 2)

⁹¹ Interestingly, the Hungarian government decided to introduce the capping in the spirit of the Commission's original proposals, i.e. by imposing a sort of “confiscatory” capping on farms cultivating more than 1200 hectares. (Source: Hungarian Ministry of Agriculture – <http://www.kormany.hu/hu/foldmuvelesugyi-miniszterium/parlamenti-allamtitkarsag/hirek/a-kormany-minimalizalni-akarja-az-orosz-embargo-karat>)

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Automotive industry in the EU10 economies: Developments in the past decade

Gábor Túry

Introduction

Following the recent global economic downturn, the position of companies in the automotive industry and their outlook was a major issue regarding the development of consumer markets. This is natural, since the industry employs 5% of all workers in the manufacturing industry of the world (more than 50 million people including suppliers) and thus has significant weight in the global economy. No other manufacturing activities have shown such tremendous development in past decades as automotive investments and no other investments seem to be as important for decision makers.

The purpose of this study is to review the development of EU10 (Czech Republic, Hungary, Slovenia, Slovakia, Estonia, Latvia, Lithuania, Bulgaria and Romania) countries in the past decade in the automotive industry. This study focuses mainly on passenger car production, but also considers other types of road vehicles like light- and heavy commercial vehicles, buses and production of parts and components of the OEMs⁹². The study deals with the structural characteristics of the branch and highlights the differences between productions in EU10 countries by using trade data. Apart from the ten years horizon the study looks back until 1990 when trade integration and liberalization of the capital flows opened a new horizon to the former centrally planned economies in the automotive industry as well. Most of the EU10 countries have a heritage of automotive production (passenger cars, buses, heavy commercial vehicles). Since the beginning of the 1990s, more integrated into the world trade and with the appearance of transnational companies (TNCs), they have been exploiting their capacities differently. The effects of EU integration as well as the effects of the recent economic crisis are also taken into account. A separate section analyses how the automotive industry/production fits into European and global production and global values chains.

Changing global framework and the consequences of the crisis

The world automotive industry underwent a sea change as global production took shape over the past four decades. Back in the 70's when Japanese automotive exports drove U.S. and European manufacturers to slash costs and relocate parts of their manufacturing processes, merely half a dozen countries accounted for the lion's share of production (Sturgeon and Florida, 2000). Growth in global production brought a profound change in the world's car manufacturing.

Whereas only seven countries accounted for 80% of the world's automotive output in 1975, by 2010 there were eleven countries demanding a share of the cake (OICA Production statistics, 2011).⁹³ Global production also required global players in related industries. An increasing number of new investments have been realized in

⁹² An original equipment manufacturer (OEM) manufactures products or components that are purchased by another company and retailed under that purchasing company's brand name. OEM refers to the company that originally manufactured the product. Source: http://en.wikipedia.org/wiki/Original_equipment_manufacturer

⁹³ The situation in the end of 2013 is the same as in 2010

developing countries with growing purchasing power since expected economic growth and favourable labour costs proved to be attractive alternatives to increase the capacities in the traditional production countries. This trend had a far more limited impact on the output of the central areas (automotive centres) than previously forecasted (Sturgeon et al., 2007). Low labour costs alone were attractive only up until the mid-1990s, not forgetting that the unique, national nature of the automotive industry added weight to political arguments, prompting big assembly companies to provide local, domestic markets with cars manufactured locally (Rechnitzer and Smahó, 2012).

Assembly continues to play a crucial role, since automotive companies are trying to avoid moving a substantial part of existing production to low labour cost countries. In the current crisis European carmakers have felt this expectation growing as governments offered helping hands to several carmakers deemed flagships of the respective national industries. Yet this applies even more to the relocation of existing plants (Tirpák and Kariozen, 2006, p. 6.); new assembly plants are clearly focused on emerging markets (China, India) and on developing areas with lower manufacturing costs (Central and Eastern Europe, Turkey). Changing production figures in China provide a good example of transforming global production focusing on emerging markets. Chinese production increased from 2 million vehicles to 22 million vehicles between 2000 and 2013 (OICA production statistics, 2014a). The increase of production in China totally reshaped the production map (see Table 1): the proportion of the European Union and North America in global production significantly decreased. The decrease was due to stagnation in the European and North-American region against Asian production, which has been increasing sharply since the beginning of the 2000s. Between 2000 and 2013 China became the largest producer in Asia and globally as well. Its production has increased ten-fold.

Table 1: Regional distribution of road motor vehicle production by main regions*
percent of total

Region	2000	2005	2010	2013
EU15	30.0	25.2	17.9	14.8
EU6	2.4	2.9	4.2	3.9
non-EU	2.9	3.7	3.3	3.9
North America	30.3	24.5	15.7	18.9
South America	3.5	4.3	5.3	5.2
Asia	30.5	38.5	52.5	52.3
Other	0.5	1.0	1.1	1.1

*EU15: Austria, Belgium, Finland, France, Germany, Italy, Netherlands, Portugal, Spain, Sweden, UK;

EU6: Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia;

non-EU: Russia, Serbia, Turkey, Ukraine;

North America: Canada, Mexico, USA;

South America: Argentina, Brazil;

Asia: China, India, Indonesia, Iran, Japan, Malaysia, South Korea, Taiwan, Thailand, Uzbekistan

Source: author's calculations based on OICA, 2014a

According to the literature (Humphrey and Memedovic, 2003; Sturgeon and Florida, 2000; Sturgeon and Biesebroeck, 2011; Veloso and Kumar, 2002) we can summarise past trends in world automotive production as follows:

- The spread of vehicle production and sales from the developed world to the developing economies since the 1990's. The markets of developed countries, mainly in the U.S., North America and Western Europe,

became saturated by the late 80's and early 90's, reducing their car replacement absorption capacity as determined by the lifespan of cars. As a result, the past two decades have seen substantial globalisation and consolidation processes taking place in the geographical allocation of production;

- Rapid growth of production and sales came from a few developing countries. These are Brazil and Mexico in the Latin American region, China and India in Asia and the Central European Region;⁹⁴
- Due to technological innovations (platform and modular production) in the 1990's, automakers are planning operations on a global scale. This holds not only for OEMs but for supply chains now designed to be global;
- Because of increasing mergers and acquisitions ownership structure has been changing in the last 20 years. Thanks to geographical presence automotive companies have become global;
- Despite global presence, regional production systems are dominant. Vehicle manufacturers in Western Europe and North America heavily concentrate productions and sales in their home region. On the production side, regional integration is a dominant trend.

In 2013, the automotive industry⁹⁵ manufactured nearly 87,3 million vehicles (OICA production statistics, 2014b). The fact that global production of 73 million units in 2007 was reduced by 3.5% in 2008 and further 12.6% in 2009 is a clear indication of the impact of the past crisis. The consolidation period of the markets began in 2010 when automotive production increased year-on-year by 25.6%.

Shrinking output has radically changed production based in the traditional triad (North America, Europe and Japan). The crisis only accelerated the geographical reallocation of production since the 1990s. The European and Japanese output has grown only modestly in the crisis period, while North American production declined. Central and Eastern European countries in total, increased their previous modest production rates. Lately, the industry outlook has been largely determined by the output of the Chinese automotive industry and its growing weight in world production.⁹⁶

When analysing the outputs of individual regions, we have to relinquish some of our reservations concerning quantity-based statistics i.e. compare the regions based on production volume. For the reason that when it comes to the applicability of data, automotive outputs vary immensely, which reflects not only the safety and environmental standards and regulations (CO₂ taxation) characteristic of a country or a region, but also the typical features of the given market. For example in the U.S. there is a strong consumer demand for crossover utility vehicles, while in Europe small cars dominate the market (Alliance of Automobile Manufacturers 2014; ACEA 2014b).

China produced nearly the same number of units as Europe, and easily overtook North America and Japan in 2009. Figures, however, do not always reflect actual supply and demand, as sizeable inventories were accumulated during the crisis and inventory sales increased significantly when demand was revived.

In terms of vehicle types manufactured, passenger cars outnumbered commercial vehicles (accounting for two-thirds). Comparing the output of the two groups, we can see that they responded differently to the downturn: the

⁹⁴ Humphrey and Memedovic (2003, p.2.) called it "Eastern Europe" but for geographical reasons we use the phrase Central Europe or Central and Eastern Europe

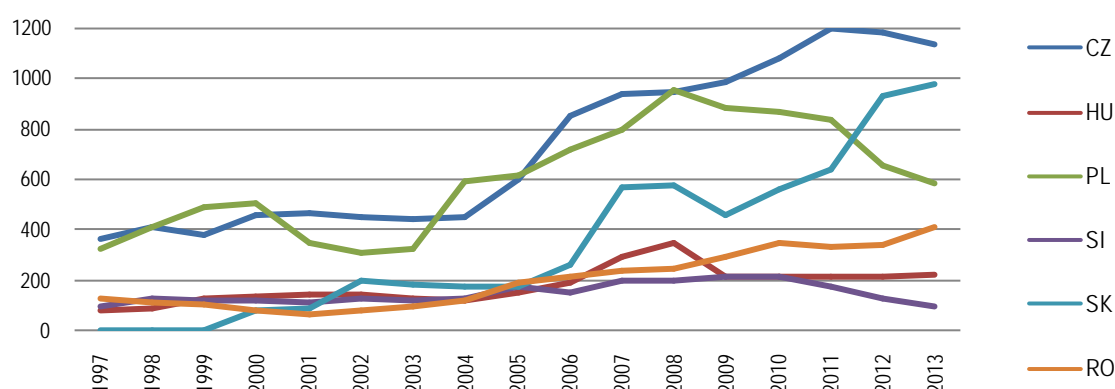
⁹⁵ Production of motorized road vehicles: passenger cars and commercial vehicles

⁹⁶ Based on the data of the OICA, in 2013 the Chinese production gives the one-quarter of the world's output.

share of commercial vehicles fell by close to 5 percentage points between 2007 and 2009. But this trend was again a continuation of an already existing trend. Lower demand leading to reduced output led the industry to get rid of (some of) its excess capacities, eliminating mass redundancies resulting from the industry's wide-ranging production structure. The impacts of this elimination hit both production in the parent country and employment at the subsidiaries.

Economic downturn and lack of increase in demand also strongly affected vehicle production in the EU6⁹⁷ countries. Figure 1 shows that despite impressive production development in the region, the output of individual countries varied. Since 2008, only the Czech Republic, Slovakia and Romania have been increasing figures. Despite the crisis, Romanian vehicle production has not decreased. Since 2009, the production in Hungary has been stagnating, while Poland and Slovenia have been experiencing decreasing output. Decrease is most pronounced in Poland, where 2013 is the fifth year when Polish car factories were downsizing production of passenger cars and light commercial vehicles (Polish Automotive Industry Association, 2014, p.23.). Regarding Slovenia, decreasing production at Novo Mesto-based Revoz (assembly of Renault cars) affected production figures.

Figure 1: Road motor vehicle production* in the EU6 countries
1000 pieces



* passenger cars + light commercial vehicles + heavy trucks + buses and coaches; excepting semi-knocked-down and completely knock-down assemblies

Source: author's calculations based on OICA, 2014a

The automotive industry in the EU10

This study analyses the automotive industry that includes not only passenger car manufacturing but commercial vehicle manufacturing i.e. production of light commercial vehicles, heavy commercial vehicles and buses as well. Covering the whole spectrum of automotive industry in the EU10 countries is legitimated on the one hand by the increased mergers and acquisitions (M&A) of the commercial vehicle industry in the past years⁹⁸. It results an increased size of the global value chains including the EU10 production sites as well. On the other hand, in some

⁹⁷ Czech Republic, Poland, Slovakia, Hungary, Slovenia and Romania

⁹⁸ see Volkswagen-M.A.N. and Volkswagen-Scania acquisitions, Volvo Truck merger with Renault Truck, Fiat Industrial merger with Renault bus and tram division

countries production of commercial vehicles and buses gives an increasing share in the automotive industry. In Poland the share of the commercial vehicles (including production of buses) rose from 13.0 % to 18.6 % between 2004 and 2013 (OICA, 2014a). Decreasing share of the production of the commercial vehicles also shows the changing production structure and decreasing number of the actors in the region. Several traditional companies ceased operations because of lack of demand or and changing global strategy of the foreign owner. There are several companies ceased their operations: Ikarus and NABI⁹⁹ bus manufacturers in Hungary, Avia commercial vehicles manufacturer in the Czech Republic Jelcz and Autosan bus manufacturer in Poland, TAM commercial vehicles manufacturer in Slovenia.

Referring to OICA statistics (2014a) and the United Nations' List of Industrial Products¹⁰⁰, passenger car manufacturing does not exist in Estonia, Latvia and Lithuania. In Baltic countries, the automotive sector is concentrating more on specialist component manufacturing, rather than the assembly of vehicles (ACEA, 2012). In Estonia some sub-sector companies (Silwi, Baltcoach, Respo Haagised) assemble special vehicles or trailers (Terterov and Reuid, 2009, p. 132) based on imports, whereas others produce various spare parts for vehicles and subcontract with large automotive companies (Volvo and Scania). The same applies to the automotive sector in Latvia, consisting of small and medium-sized enterprises (Amo Plant) mainly producing car components and trailers. In Lithuania, the situation is similar: the automotive industry focused on the manufacturing of automotive components. More than 400 companies are producing electrical and electronic, metal and plastic components to automotive industry to various OEMs (Invest Lithuania, 2014). Therefore if we compare automotive industry in the EU10 countries to Baltic countries, in the last ten years we can only talk about a supplier industry that has links to the global value chain.

In 2013, nearly 3.5 million vehicles rolled off the production lines (see Figure 1) in the six new EU member countries: the Czech Republic, Hungary, Poland, Slovenia, Slovakia and Romania (OICA production statistics, 2014b). This represents 17.3% and 3.9% of European¹⁰¹ and world outputs respectively. The EU10 countries' share in European output more than doubled (2.6 times higher) since 2000 and the rate is almost the double (1.7 times higher) of world output. This development is even more dynamic if we also consider that the share of CEE countries¹⁰² in the manufacturing of passenger cars in the European Union has increased more than three-fold from 1996 to 2013 (ACEA, 2014b; OICA Production statistics, 2014a).¹⁰³ Looking back, since the European accession production has been increasing from 1.4 million to 3.4 million vehicles per year. Contrary to international trends, the manufacturing of passenger cars became completely dominant in these countries. Compared with the global and European average of 75% and 91% respectively, 97% of vehicles manufactured in the region were passenger cars in 2013. The vast majority of passenger car models assembled in the EU10 countries are so-called economy- or subcompact and compact cars, but premium category vehicles are also manufactured here (in the Bratislava, Mladá Boleslav and Győr plants of Volkswagen, Škoda and Audi Hungary Motor respectively).

We cannot speak of industrialisation in the case of transition economies, since these countries already had developed manufacturing industries before the change of regime (Inotai 1995). Currently we are witnessing new

⁹⁹ North American Bus Industries (NABI) was sold to New Flyer Industries in 2013 and Hungarian production places were closed by 2014.

¹⁰⁰ <http://unstats.un.org/unsd/industry/commoditylist2.asp>

¹⁰¹ According to the OICA classification, Europe means EU27 plus Serbia, Russia, Belarus, Ukraine, Uzbekistan and Turkey.

¹⁰² According to the ACEA classification, CEE means Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia.

¹⁰³ Referring to OICA (International Organization of Motor Vehicle Manufacturers, www.oica.net) database, In the case of CEE production figures semi-assembled import contents have been decreasing since the beginning of the 2000s. Regarding automotive production, the paper takes into account the double counting method by using net figures.

manufacturing mechanisms and products replacing old technologies. The nature and pace of the transition varies from country to country. The automotive industry tradition is rooted in the period of regime changes in 1990. Production in the former socialist countries – with the exception of the long tradition of the Czech automotive industry – was based mainly on licence agreements (Fiat in Poland, Yugoslavia and the Soviet Union, Renault in Romania) dating from the sixties (Pavlínek, 2008, p.3.). According to UN statistics (UN Industrial Statistics Yearbook, 1990), Central and Eastern European automotive production in 1990 was 699 thousand pieces, which represented 1.7 percent of the world and 3.6 percent of European production at that time.¹⁰⁴ The biggest producers were Poland (309 thousand) the former Czechoslovakia (248 thousand) and Romania (110 thousand). Production in Bulgaria (24 thousand) and Hungary (9 thousand) was more modest. However, taking the structure of production into account, we should add some remarks. Eighty-eight percent of Hungary's output came from the production of buses: at the time Hungary was the third biggest bus producer in Europe (excluding the Soviet Union). The former Czechoslovakia - besides having remarkable car production - produced enough trucks to ensure its leading position among socialist countries. Regarding comparability of historical data we should note that Slovenia was part of Yugoslavia while the Baltic States were part of the Soviet Union.

The automotive industry in the EU10 region is rather heterogeneous, despite the more or less similar local resources (tax incentives, low production costs, well-established infrastructure) in the economies. This can be explained - among other things - by the different ways these countries opened up to foreign investors in 1990s, the industrial traditions of individual countries, the outputs of local subsidiaries of international companies.

As a result of the bankruptcies, production may cease (Daewoo Motors' affiliate in Poland) or if a new owner emerges (Daewoo Motors' affiliate in Romania), production might continue.

Mergers of international companies (Fiat with Chrysler, Fiat Industrial with Renault bus and tram division, Volvo Trucks with Renault Trucks, Volkswagen with Scania and Volkswagen with M.A.N.) can modify the international map of production. Bus production of the Italian company Iveco in the Czech Republic has been growing since the merger of the Fiat industrial bus division with Renault bus division, but production ceased in Hungary some years after the acquisition of the Ikarus Rt because of overcapacity. Acquisitions of the Scania and the M.A.N. by the Volkswagen could result in increasing cooperation between the affiliates in the EU10 region or optimization of the production between the production facilities.

Cooperation agreements (Toyota Motors with the French PSA, General Motors with Fiat, General Motors with Suzuki) created new production plants or increased the previous production. In the Czech Republic the Japanese-French TPSA presented their cooperation producing a new mini city car. Cooperation with the Japanese Suzuki and the General Motors owned Opel results in the production of a mini car in Hungary and Poland with the same platform but different brand.

To ensure their market presence and to boost their competitiveness (Dunning, 1993) the big European and overseas carmakers use the specific attributes of the region to relocate some of their activities, just like companies from the Far East do. Mainly Japanese (Suzuki Motor, Toyota Motor) and South-Korean (Daewoo Motors, KIA-Hyundai) or Chinese (Great Wall Motors) companies have set foot and established a stronghold for their expansion into Western Europe (Hyun, 2008, p. 226.).

Ten car manufacturing companies from Japan to the U.S. and another half dozen automotive firms (in the bus and truck industry) currently have almost three dozen production sites throughout EU10 countries (see Table 2).

¹⁰⁴ Europe and the former Soviet Union.

Almost every main carmaker and their suppliers, which account for 80% of world production, are present in the region. It will come as no surprise that given developments in the 2000s, the region has been labelled the “new Detroit” (Unicredit, 2007).

Table 2: List of automotive companies in EU10 countries in 2013*

parent company	subsidiary	location (country/city)	founded/ purchased	production	workforce	export share as total
Volkswagen AG/AUDI AG	Audi Hungaria Motor Kft.	HU/Győr	1994/2020	engines, parts, car assembly	10,000	99.8%
Daimler AG	Mercedes-Benz Manufacturing Hungary Kft.	HU/Kecskemét	2008	car assembly	3,119	99.7%
Suzuki Motor Corporation	Magyar Suzuki Zrt.	HU/Esztergom	1991	car assembly	2,930	91.5%
General Motors Europe Ltd.	Opel Szentgotthárd Autóipari Kft.	HU/Szentgotthárd	1991	engines, components, remanufactures transmissions	680	95.0%
Kühne Zrt.	Kravtex Kereskedelmi Kft.	HU/Győr	1992	buses	400	
General Motors Europe Ltd.	General Motors Manufacturing Poland Sp. z o.o.	PL/Gliwice	1998	car assembly	2,930	96.5%
	General Motors Powertrain Poland Sp. z o.o.	PL/Tychy	1996	engines	550	
Toyota Motor Corporation	Toyota Motor Industries Poland Sp. z o.o.	PL/Jelcz-Laskowice	2002	engines	798	
	Toyota Motor Manufacturing Poland Sp. z o.o.	PL/Walbrzych	1999	engines, transmissions	2,040	
Volkswagen AG	Volkswagen Poznan Sp. z o.o.	PL/Poznań	1993	components, car assembly	6,800	98.5%
	Volkswagen Motor Polska Sp. z o.o.	PL/Polkowice		engines	1,215	
	Sitech Sp. z o.o.	PL/Polkowice		components	1,640	
Fiat Automobiles S.p.A.	Fiat Auto Poland S.A.	PL/Bielsko-Biala	1971/1992	engines, components		
		PL/Tychy	1971/1992	car assembly	3,340	99.5%
Ukrainian Automobile Corporation JSC	Fabryka Samochodów Osobowych S.A.	PL/Warsaw	1951	components		
Solaris Bus & Coach S.A.	Solaris Bus & Coach S.A.	PL/Bolechowo	1996	buses, trams	2,000	77.6%
Scania AB	Scania Production Slupsk S.A.	PL/Slupsk	1993	buses	747	100%
Volkswagen AG/M.A.N. SE	MAN Truck & Bus Polska Sp. z o.o.	PL/Poznań		buses, components	976	98.5%
		PL/Starachowice	1948/1999	components of buses	1,420	
		PL/Niepolomice-Kraków		trucks	438	76.2%
Volvo AB	Volvo Polska	PL/Wroclaw	1995	heavy trucks, buses	2,300	99.2%
Jelcz	Jelz Sp. z o.o.	PL/Wroclaw	1952	trucks, components	430	

Table 2 (continued)

Fiat Group	Kapena	PL/Włynkówko	1968/2003	buses		
Solbus	Fabryka Autobusów Solbus Sp. z o.o.	PL/Solec Kujawski	2001	buses	150	
Volkswagen AG	Škoda Auto a.s.	CZ/Mladá Boleslav	1895/1991	engines, gearboxes, components, car assembly	20,419	90.6%
		CZ/Vrchlabí	1946/1991	gearboxes	529	
		CZ/Kvasiny	1934/1991	car assembly	3,374	
Toyota Motor Corporation -PSA Peugeot Citroën	Toyota Peugeot Citroën Automobile Czech s.r.o.	CZ/Kolín	2002	car assembly	3,200	99.6%
KIA-Hyundai	HMMC-Hyundai Motor Manufacturing Czech s.r.o.	CZ/Nošovice	2006	gearboxes, car assembly	3,500	99.4%
Tatra	Tatra a.s.	CZ/Kopřivnice	1897	heavy trucks, military vehicles	3,000	59.5%
Sor Libchavy spol. s. r. o.	Sor Libchavy spol. s. r. o.	CZ/Libchavy	1991	buses	628	44.0%
Fiat Group	Iveco Czech Republic, a.s.	CZ/Vysoké Myto	1895/1994	buses	2,891	91.9%
Volkswagen AG/M.A.N. SE	PBS Turbo s.r.o.	CZ/Velká Bíteš	1956/2000	components	197	
KIA-Hyundai	KIA Motors Slovakia s.r.o.	SK/Zilina	2004	engines, components, car assembly	3,900	99.0%
PSA Peugeot Citroën	PSA Peugeot Citroën Slovakia	SK/Trnava	2003	car assembly	3,500	99.5%
Volkswagen AG	Volkswagen Slovakia a.s.	SK/Bratislava	1971/1991	car assembly	8,417	99.3%
		SK/Martin	2000	components	815	
		SK/Kosice	2004	assembly, logistic	168	
Renault S.A.	Revoz d. d.	SI/Novo Mesto	1959/1991	car assembly	2,076	98.4%
Renault S.A.	Automobile Dacia S.A.	RO/Mioveni	1966/1999	car assembly	8,000	93.0%
Ford	Ford Romania S.A.	RO/Craiova	1976/2007	engines, car assembly	4,000	94.0%
Great Wall Motors Co. Ltd	Litex Motors AD	BG/Lovech	2009	car assembly (CKD)	150	

* all data for 2013

Source: data were collected by the author based on ACEA (2014a) and corporate reports

The role of the automotive industry in the EU10 economies has increased tremendously in the past 20 years or so. Its share (manufacturing of motor vehicles: NACE Rev. 1.1 DM34 and NACE Rev. 2 C29¹⁰⁵) in the gross value added of the manufacturing industry grew almost four-fold from 3.5% in 1995 to 12.8% in 2012¹⁰⁶.

¹⁰⁵ Taking effect from January 19, 2007 and mandatory for EU Member States as of January 1, 2008, the statistical classification of activities in accordance with NACE Rev.2 is indicated as CM, older data is given indicating the old nomenclature.

¹⁰⁶ Eurostat database: National Accounts, 2014

Table 3: Importance of the automotive industry: detailed data of the manufacture of motor vehicles, trailers and semi-trailers (NACE Rev. 2 C29)

Country	Employment (2013)		GVA (2012/see notes)
	Employees (1000)	Percent of manufacturing employment	Percent of the manufacturing GVA
EU28	2 956.3	8.9	9.1*
EU27	2 951.8	9.0	9.1*
Germany	1 097.5	14.2	15.8*
Czech Republic	191.5	15.0	17.9
Hungary	105.1	12.8	17.7
Poland	230.7	7.8	8.1
Slovenia	19.0	9.4	8.1
Slovakia	89.4	16.6	20.1
Estonia	3.9	3.5	4.0
Latvia	:	:	2.1**
Lithuania	:	:	1.4*
Bulgaria	10.0	1.8	2.2
Romania	160.9	9.6	14.7

: not available;

* 2011;

** 2010

Source: author's calculations based on Eurostat statistical database: Employment and unemployment (LFS) 2014 and National Accounts 2014

The economic importance of the industry varies greatly from country to country because the automotive industry in the region is anything but homogeneous. The types of vehicles and the individual models are different, while the value added also varies. The industry is highly important in terms of employment (see Table 3) in the Czech Republic (4.0%) and in Slovakia (3.9%), while in Poland and Romania the share of employees (1.5% and 1.8% respectively) is only less than half of the Czech figure. Hungary ranks in the middle (2.7%). Considering the total share of the automotive industry, i.e., indirect contribution including production and service activities connecting to supplier industries, its share in employment could be 5-6 times the figures cited above (ACEA, 2014b, p.29.).

Compared to employment, the industry has outstanding figures in terms of gross value added (see Table 3). The biggest differences between gross value added and employment rates are in Hungary, Slovakia and Romania. Despite outstanding figures, based on gross value added per employee, it is clear that the region has generally more labour-intensive activities (Barta, 2012, p.57.; Sturgeon and Biesebroeck, 2011, p.188.; Vass, 2005, p.5.). The region has its biggest advantage with regard to production costs. Comparing labour cost levels between Western-Europe and the Central and Eastern European we see that the difference is fivefold, benefitting the CEE countries (PWC, 2013). Geographical proximity to the main markets is also a crucial factor investing into the EU10 countries (Schmitt, A. - Van Biesebroeck, J., 2013).

The engine of economic growth in the EU10 region is the expansion of exports (from this point of view, Poland with its sizeable domestic market is an exception). Thanks to FDI, the corporate sector and the export focus of the countries increased in the CEE region (Djankov and Hoekman, 1996; Jensen, 2002). Earlier, in the first half of the 90's, the most typical investments were labour intensive and generated lower added value; these were followed later by major investments in electronics and machine manufacturing representing higher technological

levels (Barta, 2012). The automotive industry has an outstanding position regarding foreign capital invested in the EU10 region: the industry has exceeded 40 billion USD FDI in the past two decades (Pavlínek et al., 2009). As a result, production value in the manufacturing of motor vehicles increased sharply; by fivefold between 1990 and 2013 (UN Industrial Statistics Yearbook, 1990; OICA, 2014a). Making up for lost time, Slovakia attracted record FDI from the late 90's, as a result of which the industry grew seventeen-fold, which was unprecedented in the region in the aforementioned period.

Other studies have tried to measure the significance of the industry by quantifying its contribution to economic growth. Tirpák and Kariozen (2006) measured the GDP contribution of the passenger car industry¹⁰⁷. In 2005 the highest level is in the Czech Republic and Slovakia, where it lately has explained about one fifth (19% and 23% respectively) of total GDP growth. In Hungary the industry contributed only 4.3 percentage points and in Poland only 2.2 percentage points compared to the actual GDP growth.

In addition to local market-seeking motives (Volkswagen, 1991, p. 11.), automotive investments in EU10 countries built their capacities largely on exports. For example, 98-99% of the Czech automotive output was exported in 2013 (AIA, 2014). The export rates in 2013 for the different companies vary from year to year; while the biggest exporter is Škoda Auto, which exports 90.6% of its production, the Japanese-French Toyota Peugeot Citroën Automobile (TPCA) group exports 99% of its production. The rates are very similar in Hungary, Slovenia and Slovakia as well (see Table 2). What is more, in spite of its rather large domestic market, Poland has also similarly high export rates.

Foreign trade linkages are influenced by the intra-firm positions of the affiliates in global production chains of the foreign firms. Regarding export directions, the most "EU dependent" countries were Slovakia and the Czech Republic in 2013, with 82.6% and 80.8% of all exports respectively. On the other side the least "EU dependent" countries are Lithuania and Bulgaria with 40.1% and 44.6% respectively. Germany is the biggest partner for all countries except for the Baltic economies, where the eastern dimension (neighbor countries and Russian Federation) dominates. Trade relations are also influenced by geographical location. For Estonia, the largest EU trade partners are Sweden and Finland. In the case of Latvia and Lithuania, mutual trade is most important in the EU. Southern linkages are evident in the case of Slovenia, where the fourth biggest partner is Italy.

The product structure of foreign trade changed dramatically in the transition countries as early as in the first half of the 90's (Havlik, 1996). Given the product specialisation in the sector, certain activities in the manufacturing industry (manufacturing of iron and steel products, textile and chemical industry, manufacturing of machinery and vehicles) had a greater weight in exports compared to the previous period. The product structure of foreign trade is also influenced by the fact that in addition to electronic parts (manufacturing of electric machinery and equipment – DL) the manufacturing of vehicles (manufacturing of motor vehicles – NACE Rev.1.1: DM43; NACE Rev.2.: C29) has also high export intensity (Havas, 2010, p. 3.).

Product classification SITC Rev.3 provided by the World Trade Organization is used in this study.¹⁰⁸ Statistics show that the automotive industry¹⁰⁹ achieved excellent performance in exporting motor vehicles and their components: in 2013 it accounted for 16% of total exports from EU10 countries. This share is around three

¹⁰⁷ Tirpák and Kariozen (2006) used the phrase "car industry" to describe the passenger car production.

¹⁰⁸ <http://stat.wto.org/StatisticalProgram/WSDBStatProgramTechNotes.aspx?Language=E>

¹⁰⁹ Automotive products: motor cars and other motor vehicles principally designed for the transport of persons (other than public transport type vehicles) including station wagons and racing cars, motor vehicles for the transport of goods and special purpose motor vehicles, road motor vehicles, n.e.s., parts and accessories of motor vehicles and tractors, internal combustion piston engines for vehicles listed above, electrical equipment, n.e.s., for internal combustion engines and vehicles, and parts thereof (SITC groups 781, 782, 783, 784, and subgroups 713.2, 778.3).

percentage points higher than in 2000. The weight of the industry in exports varies considerably from country to country. It has the highest share in Slovakia, where it accounted for more than one quarter of total exports (see Table 4). At the other end of the scale we find Bulgaria, where vehicle manufacturing played a continuously increasing role in external trade despite the share of the industry in exports being a mere 1.7% in 2013.

Table 4: Share of automotive products in the exports of selected countries
percent

Year	BG	CZ	EST	HU	LT	LV	PL	RO	SI	SK
2000	0.4	16.4	1.8	17.2	2.6	0.5	13.0	1.9	12.3	20.3
2001	0.4	16.8	2.5	17.4	5.1	0.7	12.3	2.1	11.8	18.0
2002	0.5	17.0	3.2	17.1	6.9	0.9	12.9	2.5	12.9	19.6
2003	0.4	16.5	3.2	13.7	5.4	0.8	13.7	2.6	12.1	27.5
2004	0.4	15.6	4.1	13.4	4.8	1.2	16.6	3.2	13.5	23.0
2005	0.6	17.4	5.0	16.5	5.2	2.4	16.7	4.9	16.3	18.1
2006	0.4	17.9	5.1	17.7	7.3	4.5	17.0	6.6	15.2	19.8
2007	0.6	17.7	6.7	18.0	8.2	5.1	16.9	8.7	18.8	23.3
2008	0.7	16.7	6.1	16.7	6.4	5.3	17.5	8.5	18.1	21.8
2009	1.0	18.7	4.4	14.6	5.4	5.0	17.9	12.2	18.4	20.2
2010	1.5	18.5	3.8	14.4	5.9	4.4	15.7	12.5	16.7	21.0
2011	1.7	18.5	3.3	14.8	6.5	4.8	15.5	12.1	15.6	22.3
2012	1.4	18.6	3.2	15.7	5.4	3.8	13.5	13.1	14.6	24.7
2013	1.7	19.2	3.3	17.3	5.2	2.9	13.1	15.2	14.5	26.1

Source: author's calculations based on Eurostat Comext 2014

Regarding export destinations of the automotive products, Germany has key role. Germany is the biggest trade partner for seven of the EU10 countries (see Table 5). The country is not only the biggest market for the automotive companies located in the EU10 countries but German companies (Volkswagen-Audi-M.A.N. and Daimler) have leading role regarding the production. The other trade characteristic is that most of the trade partners are EU15 countries.

The Baltic States have strong economic linkages to the former Soviet republics (Benkovskis et al., 2014). Therefore the main export directions of Baltic countries are neighbour countries and CIS¹¹⁰ countries. The strength of the eastern relationship is increasing from north to south (see Table 5). The same characteristic applies to Bulgaria where after Germany, neighbour countries i.e. Turkey and Romania are the most important trade partners.

¹¹⁰ Commonwealth of Independent States

Table 5: Directions of the automotive
the largest partner above 5% regarding the automotive exports

Rank	BG	CZ	EST	HU	LT	LV	PL	RO	SI	SK
1	DE	DE	DE	DE	DE	LV	EE	RUS	DE	DE
2	UK	SK	UK	FR	UK	LT	LT	BLR	TK	FR
3	FR	ES	IT	AT	FR	RUS	DE	KAZ	RO	RUS
4	SK		FR	IT	RUS	SE	RUS	LV	RUS	TK
5	RUS		CZ	PL	CN	FI	SE	KG		IT
6					CZ		BE			UK

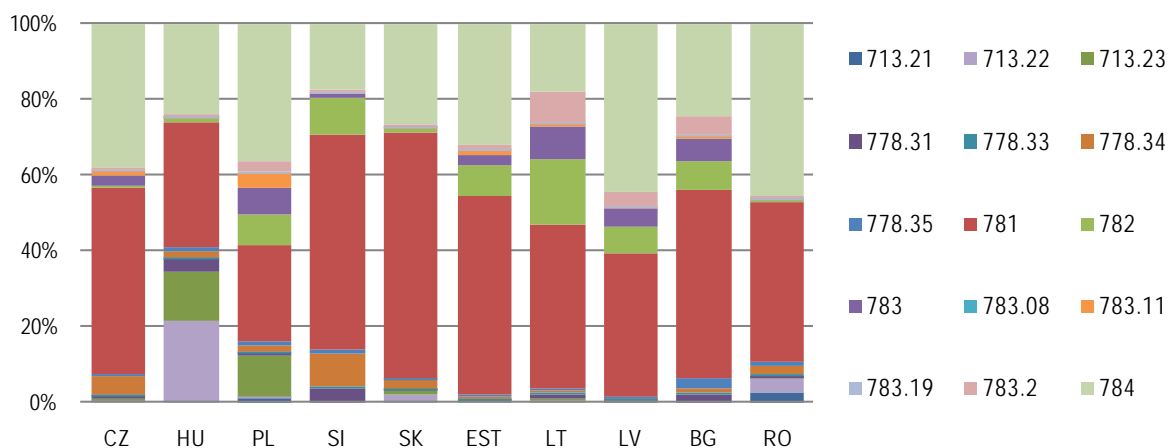
Source: author's calculations based on Eurostat Comext 2014

While the direct and short-term impacts of the operations of foreign companies at corporate and regional levels can be measured (employment, growth in output, encouraging further investment, profits reinvested, growing exports), indirect and long-term impacts do not transform into figures very easily. We can specify expectations which, given the primary impacts, represent vertical and horizontal spillovers of corporate- and industry-level modernisation (preserving jobs, expanding employment, increasing real incomes as well as in-house technology and knowledge transfer (Mišun and Tomšik, 2002, p. 57.)) –. The differences in competitiveness between foreign and domestic enterprises, however, highlight a key problem. They have led to the creation of parallel development tracks, dual economies, (Pavlínek, 2004) and at the same time so-called “cathedrals in the desert” in emerging economies (Morris, 1992; Grabher, 1994, 1997). The quality control (quality, deadlines, cost factors, the ‘just in time’ system) export-oriented companies are isolated, and establish an insignificant number of relations with domestic companies (Pavlínek, 1998; Pavlínek and Smith, 1998; Swain, 1998); these relations are also tied to the TIER 2 and TIER 3 level of the supply system.

The output structure of the automotive industry

Regarding foreign automotive companies in EU10 countries, the main part of the output (between 90-100 percent) is exported. Therefore this study analyses the output figures of the EU10 automotive industry using export data. Figure 2 shows the proportion of the main groups among automotive products. There are some groups that have a significant share in automotive export. If we consider the mentioned strong export-orientation of production, we can state that the SITC groups' cars (781) and freight transport vehicles (782), parts and accessories of motor vehicles (784), electrical lighting or signalling equipment (778.34) and internal combustion engines (713.22 and diesel 713.23) make up the main part of automotive output. Manufacturing of buses (783.11) is notable only in Poland (Solaris, M.A.N. and Scania); nonetheless, it has only a 4.1 percent share in automotive export. However, the importance of Polish bus production in European bus manufacturing has been increasing since the 2000s. Poland has appeared as the third largest bus manufacturer after Sweden and Germany, and the second largest bus exporter after Germany in Europe at end of the 2010s (Gwosdz et al., 2011). Since 2013, the European production of complete buses of the Volvo bus division has been concentrated at the main plant in Wroclaw in Poland. (Volvo, 2014, p. 42.).

Figure 2: Structure of automotive export in the selected countries in 2013, in percent of total automotive products



Source: author's calculations based on Eurostat Comext 2014

To analyse the output of the automotive industry, this study distinguishes between two main products: completely assembled vehicles and components/parts. Based on the figures from 2000, 2005, 2010 and 2013, there are certain characteristics of output by different countries. There are countries where production of vehicles (personal vehicles, commercial vehicles, buses) provides the main part of automotive production, while in other countries components (internal combustion engines and gearboxes) and parts dominate output (see Figure 3). There are remarkable shares of vehicle production in Czech Republic, Slovenia, Slovakia and Bulgaria in 2013.

Figure 3: Classification and importance of the automotive industry

Country	Share in export		Product type	
	Weak	Strong	Vehicles	Main parts and accessories
Czech Republic		●	●	
Hungary		●		●
Poland		●		●
Slovenia		●	●	
Slovakia		●	●	
Bulgaria	●		●	
Romania		●		●
Estonia	●			●
Latvia	●			●
Lithuania	●			●

Source: author

In other countries like Hungary, Poland and Romania, component manufacturing provides the biggest share in the output of the automotive industry. Based on firm level data of the national investment promoting agencies (Estonian Investment and Trade Agency, Invest Lithuania), there is remarkable component manufacturing industry in the Baltic countries as well. Regarding long-term data, there are increasing component and parts manufacturing shares in Poland and Slovakia, and increasing vehicle manufacturing in Bulgaria and Romania between 2000 and 2013. Poland has become a parts manufacturer when compared to its position in 2000, when the production of vehicles dominated output. As previously mentioned in the Baltic countries, the automotive sector is concentrating more on specialist component manufacturing. The Lithuanian automotive sector is largely oriented towards specialist component production rather than the assembly of vehicles, with a particular focus on wiring devices.

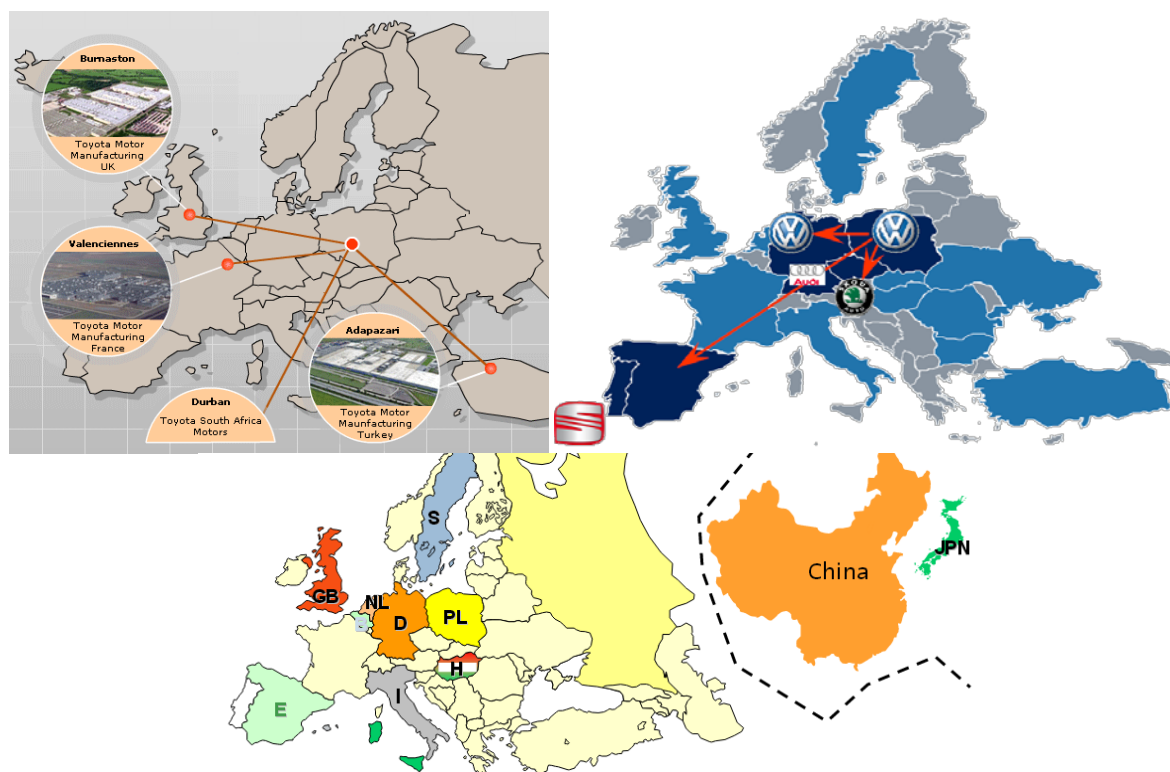
EU10 automotive production as part of the global value chain

Through the increasing export of automotive companies, the foreign trade relations of EU10 economies have also strengthened (see Table 4). However, investigating the trade types of these economies adds a new dimension to the question. Namely, a notable part of the output of the automotive firms (OEMs) in the region is exported as end products or as part of global value chains. As mentioned, these products - namely engines, transmissions and other main components - are massively exported in Hungary, Poland¹¹¹ and Romania. For companies operating in countries on the export side, the latter figure can be as high as 82% (Marin et al., 2002).

Manufacture of motor vehicles is considered a high value-added sector. Simkova (2013) highlighted the outstanding performance of the automotive industry among manufacturing activities. Analysis by M. Saito and his co-authors (2013) confirmed that the higher value added in exports inter alia in the EU10 economies is correlated with the presence of global value chains. This is evident in trade figures as well: between 1995 and 2008 the EU10 region increased its share in global value chains from 4.4% to 9.3% (Grodzicki, 2014, p 8.). At this point a question arises: what about the input side of the output? Baldwin and Lopez-Gonzalez (2013), Amador et al., (2013) among others show based on the World Input-Output Database that importing to export, i.e., the share of foreign value added in exports are extremely high in the CEE countries. For 2011, these are above 40% in the Czech Republic, Hungary and Slovakia (Éltető, 2014). These figures confirm that multinationals mainly use their own technology and know-how and do not rely on local technologies (Baldwin and Lopez-Gonzalez, 2013). The automotive industry of the Central and Eastern European region is linked into the global value chains (corporate network) as a supplier and an assembler of the end product.

¹¹¹ Regarding intra-firm trade see: Audi Motor Hungaria Kft. and Opel Szentgotthárd Autóipari Kft in Hungary; Toyota Motor Industries Poland Sp. z o.o., Toyota Motor Manufacturing Poland Sp. z o.o., Volkswagen Motor Polska Sp. z o.o., Sitech Sp. z o.o., Fiat Auto Poland S.A. and General Motors Powertrain Poland Sp. z o.o. in Poland.

Figure 4: Trade relations in the global value chain of Toyota Motor Industries Poland, Volkswagen Motor Polska and the Opel Szentgotthárd Autóipari Kft.



Source: Toyota Motor Industries Poland 2014; Volkswagen Motor Polska 2012, p. 6.; Mesics, 2008, p. 8.

In addition to the assembly of vehicles, other activities with high added value in the industry also play a key role, like assembly/production of internal combustion engines and gearboxes. Hungary and Poland excel in manufacturing engines, while thanks to its large number of automotive suppliers, the Czech Republic is outstanding in the manufacturing and export of vehicle components like brakes, safety systems and lighting equipment (Halesiak et al., 2007). Despite its small size, Slovenian automotive suppliers and engineering firms have strong supplier linkages to the European automotive industry (Erenda et al., 2014). Slovenia's automotive industry accounts for 21 percent of the entire exports of the country and notably, 80 percent of what is produced by the industry is exported in 2011¹¹².

Figure 4 shows the linkages of engine and other component manufacturers previously mentioned. In Poland, the Toyota Motor Industries Poland Sp. z o.o.¹¹³ delivers internal combustion engines to the other Toyota factories located in the U.K. and Turkey cooperates with subsidiaries in France and South Africa. The other Polish subsidiary, Volkswagen Motor Polska Sp. z o.o., also has European relations with German, Czech and Spanish locations as well as with U.S., Mexican, South African and Indian Volkswagen subsidiaries. Hungarian affiliate Opel Szentgotthárd Autóipari Kft., which produces transmissions and engines, has linkages with European production sites regarding engine delivery. For transmission delivery, the main partners are the GM factory in Sliedrecht (Netherlands) and the Chinese GM joint-ventures. The revenue (engines and vehicles) of the Audi

¹¹² The Slovenia Times (2011): Made in Slovenia: Automotive Industry, 14 Nov 2011, <http://www.sloveniatimes.com/made-in-slovenia-automotive-industry/2>

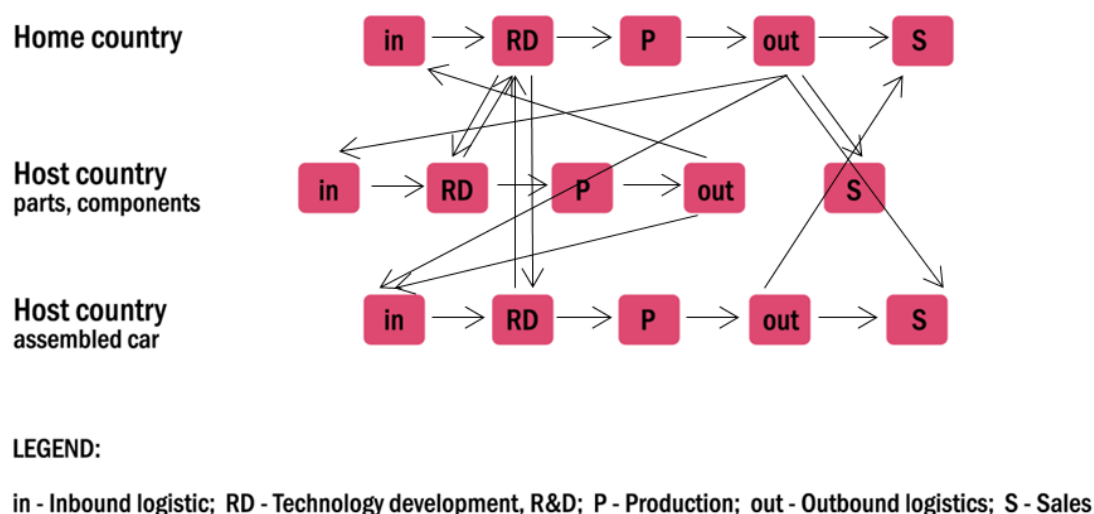
¹¹³ Spółka z ograniczoną odpowiedzialnością Polish name for the Limited liability company

Hungaria is predominantly derived from subsidiaries of the Volkswagen Group (Audi Hungaria Motor, 2014, p.12.). Regarding its motor production division, in 2013 Audi Hungaria Motor Kft. has direct linkages (trade relations) to all European affiliates of Volkswagen from Poland to Spain. It also has trade relations with Chinese Volkswagen joint-ventures and Indian affiliates of the company. In 2013, the biggest partner after Audi AG and Volkswagen AG was the Chinese joint-venture FAW-Volkswagen Automotive Company Ltd.

According to the analysis of trade relations between Audi Hungaria Motor Kft. and Volkswagen de México S.A., Túry (2014) identifies some factors that influence the trade intensity between Hungarian and the Mexican affiliates.¹¹⁴ After examining intra-firm relations of Audi Hungaria Motor Kft., Túry (2014) distinguishes two types of cooperation: joint technological development and intra-firm trade. The company has indirect technological and direct trade linkages with Mexican subsidiary Volkswagen de México S.A. Regarding collaboration in technology development, all development is coordinated by the Volkswagen Group, while trade relations exist between affiliates as well.

In case of intra-firm trade, production facilities in the EU10 countries have direct linkages mostly in the value chain.¹¹⁵ Trade relations mean delivery of components, delivery of engines and transmissions and delivery of finished products. Based on Porter's idea (1985), Schmid and Grosche (2008) distinguished four stages of the automotive industry: procurement, R&D, production and sales. Based on this, Figure 5 shows the linkages of EU10 subsidiaries to the global value chain.

Figure 5: Linkages in the value chain



Source: author, based on the idea of Schmid and Grosche 2008, p. 19.

¹¹⁴ There are internal factors like global vehicle model change, capacity problem (bottleneck) of the Mexican affiliate, economies of scale by production of certain engines and outcomes of intra-firm competition among the affiliates that have an influence. Last but not least, external factors like the trade liberalisation agreement between the EU and Mexico increased trade volume. Most of the factors are internal firm issues that influence volume and trend of trade relations in the global value chain.

¹¹⁵ Regarding the share of export in the sales of EU10 affiliates, they have mostly foreign relations

Outlook

EU10 countries' international proportions were strongly affected by the wide exposure of the region's economy to external markets. These are not only EU markets but via the global value chains (production and sales network), third countries as well. EU markets account for some 60 to 83% of total automotive exports in EU10 countries, and the dependence on imports is also significant. To make the picture even more complex, recent growth trends seem to suggest that new EU member states are not synchronised with one another, and what is even more surprising in light of the high level of intertwining, they are out of sync with the average growth trends of older Member States too.

When the international financial and economic crisis spilled over into Europe, EU10 countries found themselves in a highly vulnerable situation. The previous economic figures were based on the growing (export) performance of one or two key industries, which causes small problems during a short period of economic downturn but wreaks structural havoc at national level in a massive recession like this. While in the U.S. markets, crossovers vehicles¹¹⁶ have the biggest share of the cake (Alliance of Automobile Manufacturers, 2014) in sales, the demand for small cars is highest in Europe (ACEA, 2014b), and fuel-efficient cars with lower consumption were much sought after. In this segment, the European market is strongly influenced by massive quantities of cars produced in EU10 countries.

The outlook for automotive production in EU10 countries is not just dependent on demand in the main (external) markets, but on current global players' structural changes. Slumping sales figures in traditional markets encourage carmakers to relocate production to emerging markets. Over the past couple of years the industry has undergone substantial changes, not only in terms of geographical (regional) allocation of production but also in terms of major technological development in certain countries. Ramping up their production, China and India now have technologically more advanced models to make them increasingly worthy competitors of carmakers in developed countries. In recent years Chinese and Indian companies had several successful businesses acquire majority stakes in European manufacturers¹¹⁷, providing access to a significant portion of current technologies and developments. This latter presents a strategic issue because - for example - it thwarted the sale of Saab Automobile to a Chinese consortium. (The purchase was blocked by former owner General Motors, which opposed the transfer of technology and production rights to a Chinese company.¹¹⁸)

The outlook for EU10 plants closely integrated into the global car manufacturing system is determined both directly and indirectly by international automotive processes. Changes have brought about a consolidation of automotive players but are also key to their future competitiveness. In addition to acquisitions and fusions since the 1970s (Heneric et al., 2005), further consolidation can be expected, which will primarily take place in the form of technological collaborations between individual companies and within companies as well. EU10 subsidiaries are parts of the international partnerships of their parent companies: in Hungary, GM-Suzuki agreed to manufacture models on a joint platform; the Fiat-GM (Powertrain) cooperation in Hungary and Poland to manufacture engines; and the Fiat-Ford partnership to assemble Ford cars in Fiat's Poland facility. There are also examples of collaboration initiated by plants in the region, such as the Japanese Toyota Motor Corporation

¹¹⁶ A crossover (CUV) is a vehicle built on a car platform and combining, in highly variable degrees, features of a sport utility vehicle (SUV) with features from a passenger vehicle, especially those of a station wagon or hatchback.
[http://en.wikipedia.org/wiki/Crossover_\(automobile\)](http://en.wikipedia.org/wiki/Crossover_(automobile))

¹¹⁷ In 2005 the Chinese Nanjing Automobile Corporation acquired some assets of MG Rover Group and Powertrain Ltd, the British Land Rover was acquired by an Indian company Tata Motors in 2008, while Swedish Volvo cars (Volvo Personvagnar AB) have been under the ownership of the Chinese Zhejiang Geely Holding Group since 2010.

¹¹⁸ <http://newsroom.saab.com/news/news/saabautomobilefilesforbankruptcy.5.33e35a55134420c33657ffe39.html>

collaborating with the French PSA Peugeot Citroën for city cars manufactured in a Czech plant. Or sometimes it is regional cooperation that brings about international cooperation (Audi models assembled in India in the local Škoda facility¹¹⁹). Due to geographically concentrated but highly diverse activities in the region, there is an excellent basis for in-house cooperation in the industry. Some of the German Volkswagen engines manufactured by Audi Hungaria Motor Kft. are built in the company's Czech and Slovakian plants, while the Czech (Hyundai) and the Slovakian (Kia) plants of the Korean Hyundai Kia Automotive Group have set up a joint supplier system.¹²⁰

The future points to further standardisation of products and production of vehicles. Introduction of the MQB¹²¹ platform system by Volkswagen beginning in 2012 – which was based on a formerly installed platform and modular system – led to more uniform production. However, there is a higher flexibility in production through standardisation, meaning utilisation of the concept within plants and across brands and locations (Volkswagen, 2012). There is no question that those manufacturers that organise their production and sale globally, will be more competitive. Therefore, individual production plants – including subsidiaries in the EU10 countries – of the companies could be more involved in the global value chain of the company.

The joint funding of necessary R&D projects is crucial not only in terms of financial background but also when it comes to sharing risks. This does not only mean mutual utilisation of identical components of certain models, but also far-sighted developments such as replacing the current combustion engine drive train. Thinking about the future, companies agreed to cooperate in the hope of gaining competitive edges and future market niches (Toyota¹²², Daimler¹²³, Tesla Motors, PSA Peugeot Citroën-Mitsubishi¹²⁴), which is paving the way for alternative drive technologies to replace traditional fuel-powered technologies. In addition to the industry itself, the crisis has redrawn market demand as well.

Summary

In the last decade and a half we have seen tremendous development in automotive capacities in EU10 countries. Total production has been increasing 2.5 fold to 3.5 million vehicles from 2000 to 2013. There are countries where automotive products became dominant export products and there are countries where the industry has only a small proportion of exports. The structure of production is also different between countries. In some countries the vehicle assembly is the main activity, while in other countries, the parts and components provide the bulk of output. Common to these countries that almost 100 percent of output goes to exports. Regarding international trade, intra-firm trade i.e. trade within the global value chain is the main organising principle. Intra-firm linkages mean trade with finished vehicles and also with parts and components not only with European, Asian and transatlantic affiliates, but with global markets as well. Therefore, the outlook of the automotive industry in the EU10 region indirectly depends on the development of global markets.

Also, sectoral development programmes of the EU member states (the so-called scrappage schemes) could give fresh impetus to the European automotive industry in the short run, but they are certainly not an alternative in the

¹¹⁹ Audi AG 2010: Annual Report 2009 p. 133.

¹²⁰ <http://worldwide.hyundai.com/company-overview/news-view.aspx?ListNum=4&idx=45&page=1&strSearchColumn=&strSearchWord=slovakia>

¹²¹ Modularer Querbaukasten i.e. Modular Transversal Toolkit

¹²² <http://pressroom.toyota.com/pr/tms/tesla-motorsand-toyota-motor-159048.aspx?ncid=11092>

¹²³ <http://techcrunch.com/2009/05/19/tesla-worth-a-half-billion-dollars-after-daimler-investment/>

¹²⁴ http://www.psa-peugeot-citroen.com/en/psa_espace/press_releases_details_d1.php?id=1122

medium term. EU funds designed to promote community transit could help some sectors of the industry stay afloat.

In addition to presenting competitiveness and market growth challenges, opportunities faced in the European and U.S. automotive companies may be able to rearrange the map of production. The strengthening market and production positions of China, India and Russia have a double-edged impact on the EU10 region. The outlooks depend partly on the position of the region, the strategies of European and U.S. companies in the short term and the development of Chinese and Indian companies and foreign companies in Russia in the medium term. Future trends will be influenced by the acquisitions, fusions, sales and collaborations within the industry, which have already benefited the region in the form of several joint developments.

New production methods and technological inventories also influence the global production map. In the EU10 region as in others, the implementation of modular production means more opportunities for subsidiaries to engage in increasingly diverse ways in the global value chain.

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Labour market of the new Central and Eastern European member states of the EU in the first decade of membership¹²⁵

Annamária Artner

Introduction

The Central and Eastern European countries that accessed the EU until 2007 (EU10¹²⁶) have integrated into the global economy successfully in the past decades. They have liberalized their trade, privatized and deregulated their economies, made efforts to adapt to the EU's legal and institutional systems and have been able to attract the investments of global companies. Since the middle of the 1990s but especially after 2000, when the transformation crisis¹²⁷ was already more or less over in the region, the *gross domestic product per inhabitant* of the CEE-countries in purchasing power standard (PPS) has been approaching to the average of the older 15 member states (EU15). In the meantime the ratio of total *inward foreign direct investment stock* of the ten countries to the inward FDI-stock of the EU15 has grown faster than the weight of their GDP relative to the GDP of the EU15.

The economic growth of these new member states has been more dynamic in the past decades than that of the older 15 members. Between 1995 and 2008 the *aggregate GDP* of the EU10 at market prices has grown from 3.9 to 8.4 per cent of the aggregate GDP of the EU15. After that period this catching up process has come to a halt and in 2013 the relative ratio of the GDP of the ten new members together to the aggregate GDP of the older ones was equal with the 2008 level. Even though between 2004 and 2013 the real GDP per capita enhanced more in the EU10 than in the EU15 and in eight out of the ten CEE countries the per capita GDP grew faster even than in Germany or Austria. Between 2004 and 2008 all EU10 but Hungary increased their real per capita production more rapidly than any other EU-country. Concerning the *speed of catching up* the least successful country within the EU10 group was Hungary. In 1995 within the group of the EU10 the Hungarian GDP per capita was the third highest in percentage of the average of the EU15. In 2013 it was only higher than the corresponding Bulgarian and Romanian data.

In the last decade the *real labour productivity per hour worked* and *GDP per employee* also grew at a higher pace in the EU10 than in the EU15.

All these facts represent that the new Central and Eastern European member states of the EU have played an important role in the extension of the production of the European capital after 2004.

Generally, economic growth involves the increase of employment and wages. This has happened in Central and Eastern Europe too during the first years of the EU-membership, giving rise to the standard of living on average and decreasing poverty and inequality in the region. The crisis of 2008, however, and its long-lasting consequences have broken these trends by slowing down the processes of improvements or even resulting in deterioration.

¹²⁵ This work was supported by the Hungarian Scientific Research Fund (OTKA Grant No 104210K).

¹²⁶ Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia and Slovenia.

¹²⁷ Kornai (1994).

This is a natural pattern of *catching up*: the high economic growth reflects competitiveness but the concomitant growth of wages evaporates this competitiveness. This process passes off frequently by and under the coverage of a credit boom as it happened for example in the 1970s in the developing countries and in the 2000s on the periphery and semi-periphery of Europe (Southern and Eastern members). After such kind of a *"pseudo" growth* the correction according to the rules of the market economy is always painful for the wage-earners, unemployed and pensioners.

At the end of the process which begins with a catching up phase, with the concomitant increase of employment and wages, the reduction of the unit labour cost via pressing down wages and social benefits on average relative to the GDP, becomes inevitable. The decrease of wages does not mean the reduction of all wages nominally. It usually happens by appearance or with the expansion of cheap labour segments on the labour market, as for example increasing employment of women and youth, growing share of part time workers¹²⁸, public work programs (e.g.: in Hungary), or the "mini jobs" (e.g.: in Germany), increasing immigration, etc. These low-wage labour market segments exert a pull-down effect on other segments of labour market too. The easiest and most frequent and "spontaneous" way of wage cuts is the fall of real wages in the face of soaring inflation, when the rise of nominal wages is under the inflation rate.

Although the reduction of real unit labour cost is a consequence of austerity policies of the governments, it is also a natural consequence of the crisis. In crisis unemployment grows that depreciates the price of labour.

In the following, statistical data is presented in order to exemplify the above mentioned processes, using Eurostat databases. The analysis is conducted for the period between 2004 and 2013. In most cases EU10 and EU15 data are used, however due to limited data availability in a few cases the average of the new member states (NMS12¹²⁹) given by the Eurostat and the average of the EU are applied in the analysis. The relationship between the data of the EU27 and the EU10 (or NMS12) characterizes the relationship between the new member states and the EU15 very well. If, for example, an indicator for the EU10 (or for the NMS12) grew more than that of the EU27 this indicator grew even more relative to the EU15.

Employment¹³⁰

In parallel with increased inward foreign capital investments, employment of Central and Eastern European countries has grown as well as a result of the EU10 countries' integration into the global and European economy. *Until the outbreak of the crisis in 2008* employment grew also in Western Europe but at a slower pace than in the Central and Eastern European countries. Mainly due to Poland's favourable labour market performance, the share of the ten new Central and Eastern European member states together within the total employment of the European Union has been growing. Between 2004 and 2008 3.4 million new jobs were created within the EU10 region, of which 2 million jobs in Poland alone. It is remarkable that Hungary was the only country within the group where the level of employment decreased in these years.

The global economic crisis has had a well-known negative effect on employment all around in Europe and the EU10 countries have been among the most affected EU member states. From 2008/2009 to 2011 the

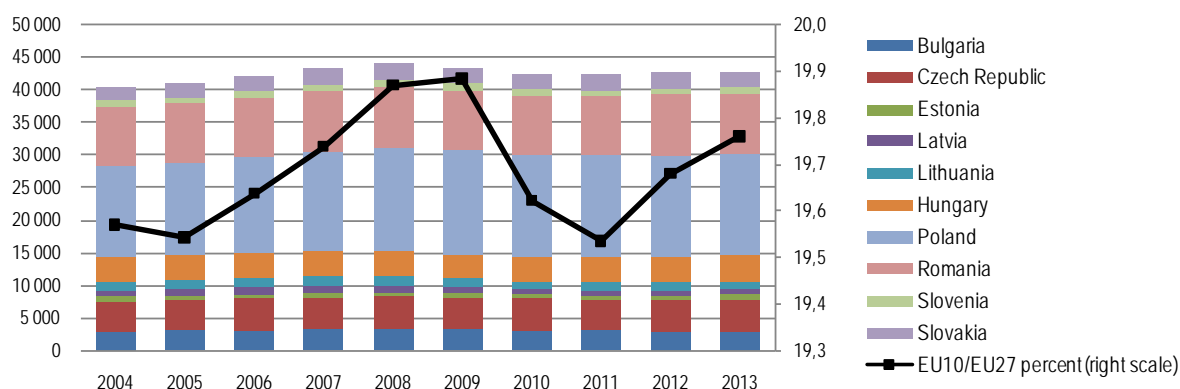
¹²⁸ Typically their hourly salary is lower than earnings of full time workers per hour.

¹²⁹ EU10 plus Cyprus and Malta. As these countries are very small economies with small number of population the aggregate data for NMS12 are practically equal with the data for EU10.

¹³⁰ The data in this chapter derive from the Eurostat, Statistics by them, Labour market, Employment and unemployment. Employment. http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_ifs/data/database

employment share of the EU10 in the EU27 decreased to the 2004/2005 level. Since 2011 this share has been gradually growing again although it has not reached the level of 2009 yet (Figure 1.).

Figure 1: Level of employment in the EU10 and share of EU10 in the employment of the EU27 1000 persons (left scale) and per cent (right scale), 2004-2013



Source: Own calculation on the basis of the Eurostat, Statistics by them, Labour market, Employment and unemployment¹³¹

Considering the *whole decade after 2004*, that contains the effect of the crisis, the data show that within the EU10 region EU-membership has not resulted in significant improvement of the labour market performance, with the only exception of Poland. The share of the ten new member states together within the total employment of the EU28 increased from 19.4 per cent in 2004 to 19.6 per cent in 2013. Without Poland the aggregate share of the nine new member states has decreased from 12.8 per cent in 2004 to 12.5 per cent in 2013.

On the long run the EU-membership could revitalize employment only in Poland, where the initial level of employment was the lowest (51.7 per cent) at the time of accession. Polish labour market has been characterized by high rate of temporary contracts, which share grew from 22.7 in 2004 to 26.9 in 2013 within the Polish employment. The latter is the double of the EU27 average.

On the one hand part time employment is less common in the EU10 than in the EU15. In the last decade the share of part-time employees was one tenth or less within the EU10-countries, while their share in the EU15 grew from 19.4 per cent in 2004 to 23.6 per cent in 2013 on average¹³². In the EU10-countries the share of part-time workers grew either very slowly or in a few cases decreased between 2004 and 2013, partly due to the high share of the shadow economy in the region (see later).

On the other hand the employment rates in the 15-64 years of age cohort grew faster in all EU10 countries than the average of the EU15 with the exception of Slovenia, where the employment rate decreased by two percentage points during the examined period. In 2004 Slovenia had the highest employment rate in the group of EU10 and was even higher than the average of the EU15. However, after 2008, the first year of the crisis, the Slovenian employment rate has decreased considerably.

¹³¹ http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_ifs/data/database

¹³² Eurostat, Statistics by theme, Labour market, Employment (main characteristics and rates) - annual averages [lfsi_emp_a]

Since 2004 the *employment rate of the youth* (15-24 years of age) has been lower in the new member states than in the EU15 on average and has decreased in the majority of the CEE countries.

The real number of people who work is likely to be higher in the CEE countries, than the above data prove because *the shadow economy* (undeclared and underreported work) is more extended in these countries (and in Southern Europe) than on the Western and Northern part of the EU.¹³³ In the period before the crisis the shadow economy (measured as a percentage of GDP) has decreased across Europe. Since 2009 its share has continued to decrease in Western and Northern Europe, while in Southern and Eastern Europe the progress has come to a halt. According to estimations in 2013 the weight of the shadow economy reached 15 to 31 per cent of the GDP of the EU10, 19 to 24 per cent in the Southern member states¹³⁴ and 8 to 16 per cent in other EU-countries.¹³⁵ The persistence of the extended shadow economy is the consequence of the insufficient demand for formal employment.

The different incentives as for example flat tax rates and reduced social security contributions that have been phased in by the governments to encourage participation in the formal economy have not proved to be successful on the long run. Bulgaria, the Czech Republic, Hungary, Latvia, Romania and Slovakia have made similar steps in the last decade. Moreover, Slovakia, the country that has one of the longest experiences with the flat tax rate, abolished it in 2013 introducing a progressive income tax system in the frame of the austerity package. This might also happen in other flat tax rate countries in the coming years if the expected results concerning the contraction of the shadow economy do not occur. Correlation between the extension of electronic payment systems and shadow economy shows that the spread of electronic payment systems can also improve the situation by making tax evasion more difficult.¹³⁶

Unemployment

Ten years ago unemployment was a more severe problem in the CEE countries than in the EU15. In 2004 *unemployment rate* was only lower in three CEE countries than the average of the older member states (EU15). However, in the last decade unemployment has improved in the EU10. Until 2008 unemployment decreased both in the EU10 and in other member states, but the improvement was faster in the former group. In 2008 there were three countries only (Latvia, Slovakia and Hungary) where the unemployment rate was higher than the average of the EU15. Between 2008 and 2010 the unemployment rate grew both in the ten CEE countries and in the EU15 on average. After 2010, however, unemployment started to decrease in seven CEE countries and increased in only two CEE countries, but at a slower pace than the average of the EU15. It was only Slovenia where unemployment rate continued to grow considerably. As a result, in 2013 there were only four countries within the EU10 group where the unemployment rate exceeded the EU15 average and even among these four countries two recorded a decreasing trend (Figure 2.).

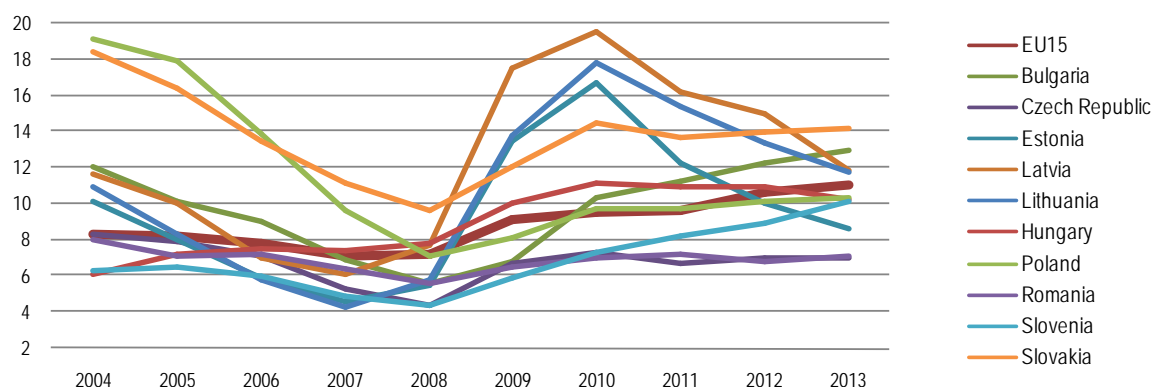
¹³³ Schneider (2011), (2012) and (2013).

¹³⁴ Greece, Italy, Portugal and Spain

¹³⁵ Schneider (2013) pp. 4-6.

¹³⁶ Schneider (2013) pp. 14-15.

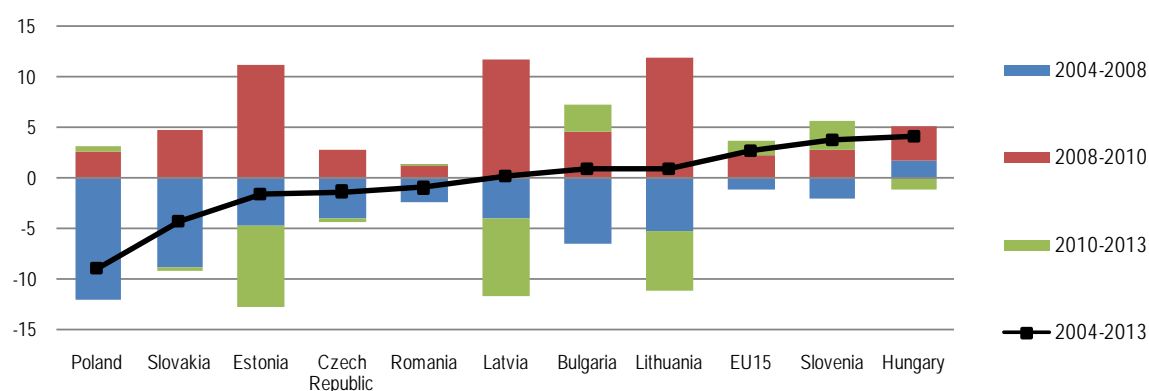
Figure 2: Unemployment rates in the Central and Eastern European countries and the EU15 percent



Source: Eurostat online, statistics by theme, Labour market, Employment and Unemployment¹³⁷

This also means that on aggregate level the joblessness of the EU10 group decreased more between 2004 and 2008 and increased more between 2008 and 2010 than that of the EU15. After 2010 the trend reversed again. Since 2010 the aggregate unemployment of the EU10 has been more or less on the same level with an increase in four and a decrease in six countries. In the EU10 group the rise of unemployment stopped in 2010 and since then it has remained relatively stable with slight increase in four and modest decrease in six countries. In the EU15, mainly due to the unfavourable labour market situation in the most crisis-hit Southern member states, unemployment has continued to deteriorate. In the whole period, i.e. between 2004 and 2013 unemployment within the group of the EU10 growth of unemployment rates measured in percentage point exceeded that of the EU15 average only in Hungary and Slovenia (Figure 3.).

Figure 3: Change of unemployment rates in percentage point 2004-2013



Source: Own calculations on the basis of the Eurostat online, statistics by theme, Labour market, Employment and Unemployment¹³⁸

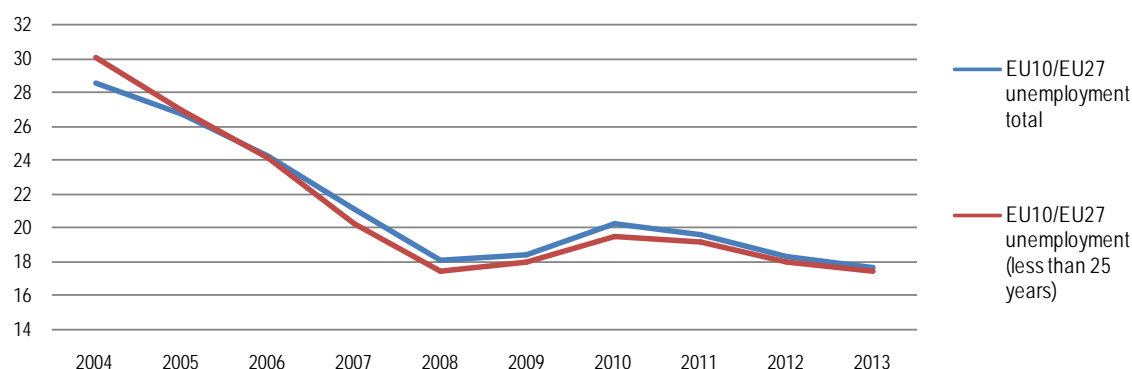
¹³⁷ http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_ifs/data/database

¹³⁸ http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_ifs/data/database

In the last decade this difference in the unemployment trends of the two country groups has resulted in a declining share of unemployment of the EU10 within the total EU level unemployment. This is also valid for youth unemployment (unemployed under 25 years of age). In 2013 the number of unemployed was more by 6.4 million in the EU15 than in 2004, whereas their number decreased by 1.4 million in the EU10 group during the same period. In the case of youth unemployment the trend is similar. In the last decade the number of unemployed under 25 years of age grew by close to one million within the EU15 while decreased by 1.4 million in the EU10.

As a result, the weight of both the total and youth unemployment of the EU10 in the corresponding figures of the EU27 was lower in 2013 than 2004 (Figure 4.).

Figure 4: The share of the EU10 in the total and youth unemployment of the EU27 between 2004 and 2013
percent

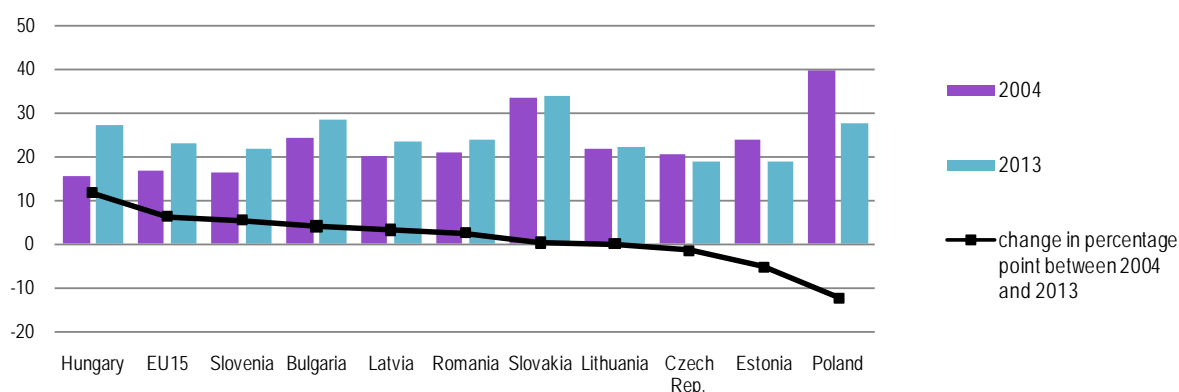


Source: Own calculations on the basis of the Eurostat online, statistics by theme, Labour market, Employment and Unemployment¹³⁹

The unemployment rate of young people aged less than 25 years in the new member states has been higher in the whole examined period than that of the EU15 on average but has increased less than the average of the EU15 or in some CEE-countries has even decreased until 2014. The only exception is Hungary where the youth unemployment rate grew dramatically, from 15.5 in 2004 to 27.7 per cent in 2013 (Figure 5.).

¹³⁹ http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_ifs/data/database

Figure 5: Unemployment rate of people aged less than 25 years in 2004 and 2013
percent and change between 2004 and 2013 in percentage point

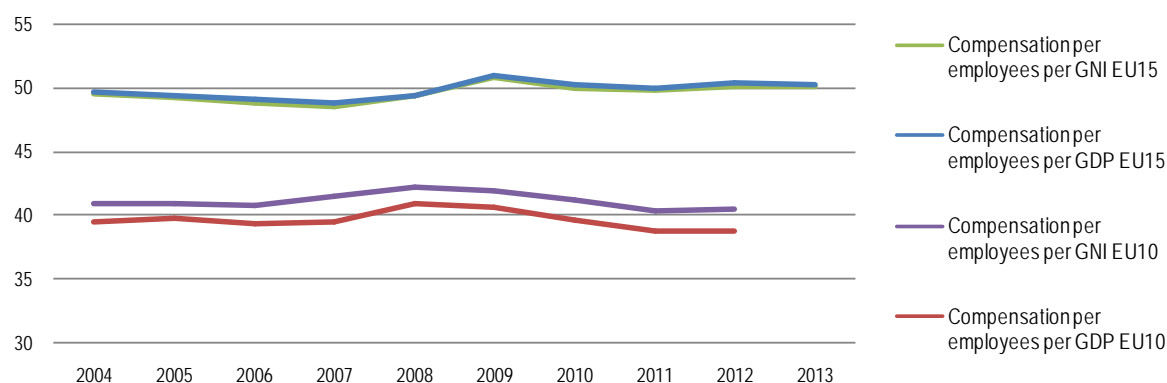


Source: Own calculation on the basis of the Eurostat Statistics by theme, Employment and unemployment, Unemployment rate by sex and age groups – annual average, %.¹⁴⁰

Labour compensation, unit labour cost

As we have seen until now the growth of employment in the EU10 has not been buoyant but more dynamic in the majority of the last decade than the labour market of the older member states. This reflects a competitive advantage of the Eastern members relative to the Western ones. This competitive advantage consists of *low wages* of the relatively well educated population plus the *shadow economy*. The latter has advantageous effects on the reproduction of capital and hence on economic growth. The shadow economy on the one hand decreases wages indirectly on the registered labour market and on the other hand ensures extra effective demand for goods and services of the registered economy. Besides, on the input size shadow economy cuts down costs for the industries and services that use its products.

Figure 6: Compensation of employees per GNI and GDP, 2004-2013
percent



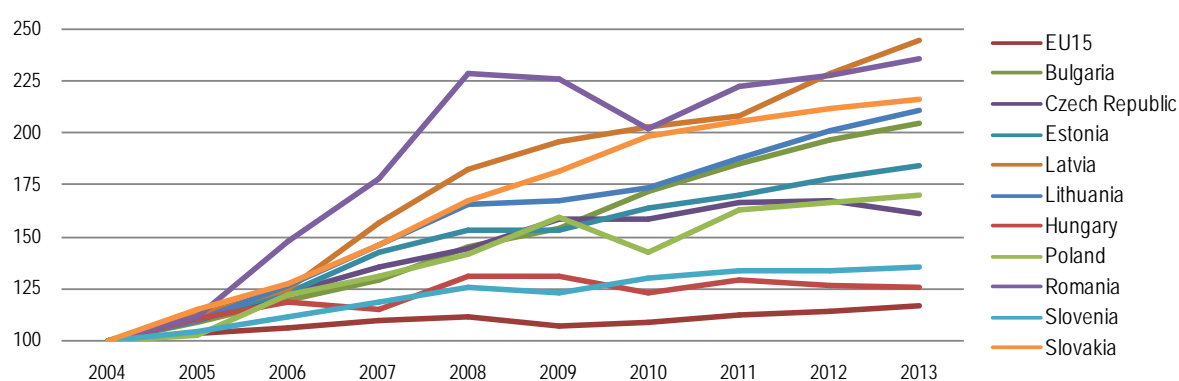
Source: Own calculations on the basis of the Eurostat, Statistics by theme, Annual national accounts, GDP and main components, Current prices¹⁴¹

¹⁴⁰ http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_ifs/data/database

In EU10 the profitability of foreign investments could have been higher than in the more developed European countries that are characterized by higher wages. The wages in the new member states are low enough for ensuring cost competitiveness even with the social contributions payable by employers. The unit labour cost has been much lower in the EU10 in the past decade than in the EU15, and *labour compensation per GDP* or GNI is by 8-10 percentage point less in the former than in the latter (Figure 6.).

This has supported the integration of the Eastern European countries into the global and European economy through providing higher profit margins to foreign direct investments in the new member states than in the more developed European countries. With the on-going relocation of technologies from the West to the East the *productivity* of the EU10 has been growing faster than in the EU15 on average. Figure 7 shows the productivity index measured as the GDP per employee. Between 2004 and 2013 the productivity of the ten new member states (EU10) grew faster than the average index of the EU15.

Figure 7: GDP per employee 2004-2013
2004=100



Source: Own calculation on the basis of the Eurostat, Statistics by them, Labour market, Employment¹⁴² and National accounts¹⁴³

However, in the EU10 the *compensation of employees* (CoE) has kept step with the growth of GDP and for this the share of the CoE in the GDP remained on the same level before the crisis, i.e. in 2004-2007. In the EU15, on the other hand, the tendency of the CoE/GDP was decreasing in the same period (Figure 6.).

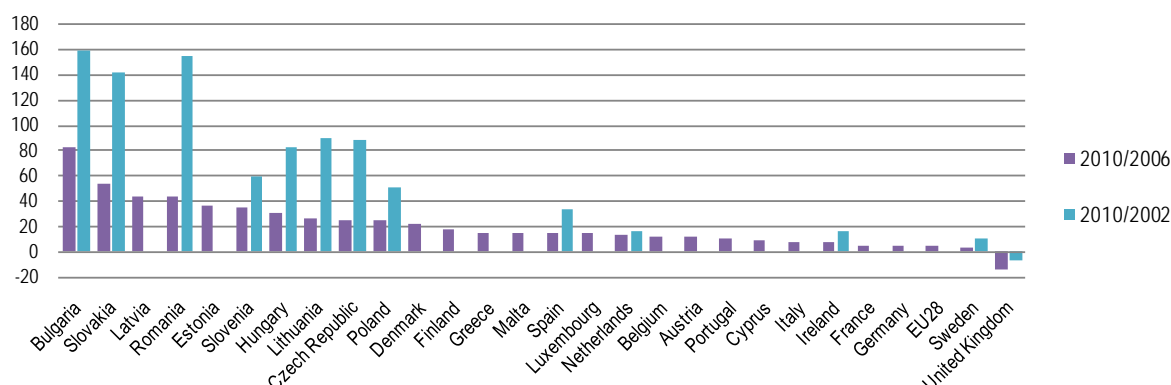
This means that wage competitiveness of the new member states has gradually lessened relative to the EU15 in the first years of membership. This development has based been on the increase of wages in Eastern Europe which is a natural tendency in less developed or peripheral economies when the production grows dynamically. Either the higher wages of foreign companies or the social policies of governments in time of prosperity give a rise to labour compensation in the whole economy. The new member states have played a leading role in the EU concerning the increase of *mean earnings* during the last decade and this tendency has continued after the onset of the crisis as well (Figure 8.).

¹⁴¹ http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database

¹⁴² http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/data/database

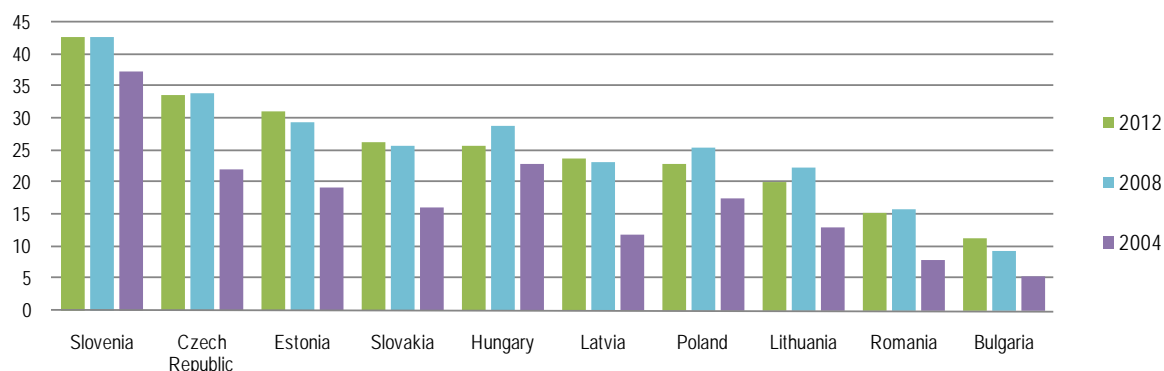
¹⁴³ http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database

Figure 8: Mean hourly earnings in euro
change in percentage point, 2002, 2006, 2010



Source: Own calculations on the basis of the Eurostat, Statistics by theme, Labour market, Structure of earnings survey – main indicators¹⁴⁴

Figure 9: Total earnings of a single person without children in the new member states as a per cent of the average of the EU15



Source: Own calculations on the basis of the Eurostat, Statistics by theme, Labour market, Earnings¹⁴⁵

Since 2004 wages and social benefits, consequently *total earnings* have increased faster in the EU10 than in the EU15, this trend was especially extensive until 2008. After that year the growth of total earnings of the EU10 as a percentage of the EU15 has slowed down, in half of the EU10 countries (in Hungary, Poland, Lithuania, Romania and the Czech Republic) total earnings have even dropped. This decrease was the highest in Hungary. As Figure 9 shows total earnings of a single person without children¹⁴⁶ in the ten Central and Eastern European countries was 5.4–37.4 per cent of the average of the fifteen older member states in 2004, this difference further increased to 11.4–42.8 per cent until 2012.

¹⁴⁴ http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/earnings/database

¹⁴⁵ http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/earnings/database

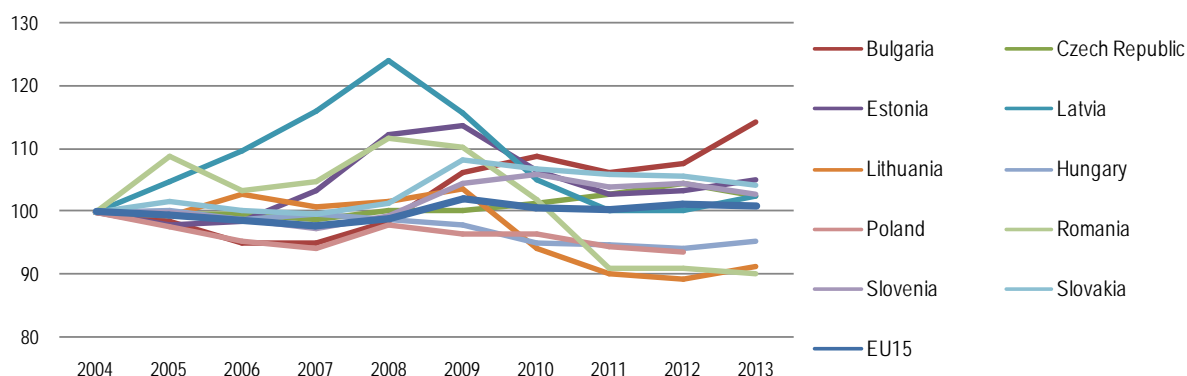
¹⁴⁶ According to Eurostat the total earnings of a person (or the total labour costs of the earner) equals with the gross earnings plus the employer's social security.

Measuring in purchasing power standards the rate of the average of the two highest *net earnings*¹⁴⁷ in the EU27 (i.e. the average of net earnings of Luxemburg and the United Kingdom) to the average of the two lowest net earnings (i.e. the average of net earnings of Bulgaria and Romania) halved, i.e. decreased from 8.4 to 4.2 between 2001 and 2012. In the same period the average deviation from the average of net earnings decreased from 44.9 to 37.2 of the average earning of the EU27.¹⁴⁸ A convergence of earnings has taken place in the EU.

Competitiveness, i.e. *profitability* decreases if wages increase at a larger pace than productivity because in this case unit labour cost (ULC) of the given country or region increases. This results in the loss of competitiveness of the given economy if the unit labour cost of its competitors increases less. In the past decades both in the EU10 and the EU15 wages grew more than productivity. Both the wages and productivity of the EU10 increased more dynamically than the wages and productivity of the EU15. However the wages advanced more relative to the productivity in the EU10 than in the EU15.

Before the crisis real unit labour cost of the majority of EU10 countries has decreased at a slower pace than in the old ones on average or even increased. This means that the majority of the EU10 countries has lost in competitiveness compared to the EU15 on average in the pre-crisis period. Poland, Bulgaria and Slovenia were the exceptions, as these countries could slightly improve their relative position to the EU15 average. The years of the crisis raised real unit labour cost in both the EU10 and EU15 countries for a while which was followed by a correction. Since 2009 real unit labour cost has fallen in Europe and in the majority of the EU10 the drop in ULC has been higher than the average of the EU15. Taking the whole decade between 2004 and 2013 the majority of the EU10 countries has lost their cost competitiveness compared to the average of the EU15 and only four of the ten countries, namely Romania, Lithuania, Poland and Hungary could improve their relative ULC-position to the EU15 by decreasing their ULC more than the EU15 on average (Figure 10.).

Figure 10: Growth of the real unit labour cost
2004=100



Source: Own calculations on the basis of the Eurostat, Statistics by theme, National accounts, Main tables, Annual national accounts, Real unit labour cost growth¹⁴⁹

¹⁴⁷ Single person without children.

¹⁴⁸ Own calculations on the bases of the Eurostat data. Statistics by theme, Labour Market, Earnings, Annual net earnings.

http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/earnings/database

¹⁴⁹ http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/main_tables

Social conditions, inequality

Since employment, labour compensation and the minimal wages have increased – as for example in Hungary since 2002 – the rate of working poor has decreased in the new member states. The in-work at-risk-of-poverty rate¹⁵⁰ for the 18-64 years old population on aggregate level of the NMS12 declined until 2008 and then, after some years of stagnation, began to rise again but did not reach the level of 2005 until 2012. The trend before the crisis was the opposite in case of EU15, where the in-work at-risk-of-poverty rate grew almost continuously between 2005 and 2012 with the exception of 2009 and 2010. Consequently the rate of working poor for the new member states was converging towards the level of EU15 (Table 1.).

Table 1: In-work at-risk-of-poverty rate for the 18-64 years old employed persons
2005-2012, percent

	2005	2006	2007	2008	2009	2010	2011	2012
EU15	7.3	7.4	7.9	8.0	7.9	7.9	8.4	8.8
NMS12	11.4	10.9	10.2	10.3	10.2	10.4	10.8	10.5

Source: Eurostat, Statistics by theme, Income, Social Inclusion and Living conditions, Income distribution and monetary¹⁵¹

The extension of the social protection system has also been stronger in the EU10 as in the EU15 on average during the last decade. This is reflected in the development of the social protection expenditures of the EU10 relative to the EU15. In 2004 total aggregated value of *social protection benefits* in the EU10 countries was equal with 3.8 per cent of the sum that the EU15 devoted to this goal and this rate increased to 5.4 per cent in 2011 (the latest year for what the Eurostat gives data in September 2014).

Growing employment, increasing wages, extended social protection benefits usually result in improving well-being which is valid for the new member states of the EU after 2004 – at least until 2008 – and has been manifested in the easing of poverty. The number and rate of people at risk of poverty or social exclusion declined in the EU10 countries until the outbreak of the crisis and have remained relatively stable afterwards. In the EU15, however, the development was the opposite: the number of people at risk of poverty or social exclusion did not change much before the crisis and subsequently started to rise. Consequently 34 per cent of the poor – as defined above – in the European Union lived in the EU10 countries in 2012 which is much less than in 2005, when their share was 51 per cent.¹⁵²

Similar results can be found also in case of inequality measured by the Gini coefficient before or after social transfer. Gini coefficient of equivalised disposable income was meaningfully higher in the new member states than the average of the EU15 in 2004 and 2005. However, since 2010 this coefficient has been lower for the new member states (in this case: NMS12) than for the EU15. The crisis divided the last decade into two periods. While between 2004 and 2008 the inequality has increased in the EU15 on average, the EU10 countries could mitigate the inequality with the exception of Bulgaria and Romania, where the Gini coefficient grew by 9.9 and 5 percentage points respectively. After the outbreak of the crisis inequality has increased again in about half of the

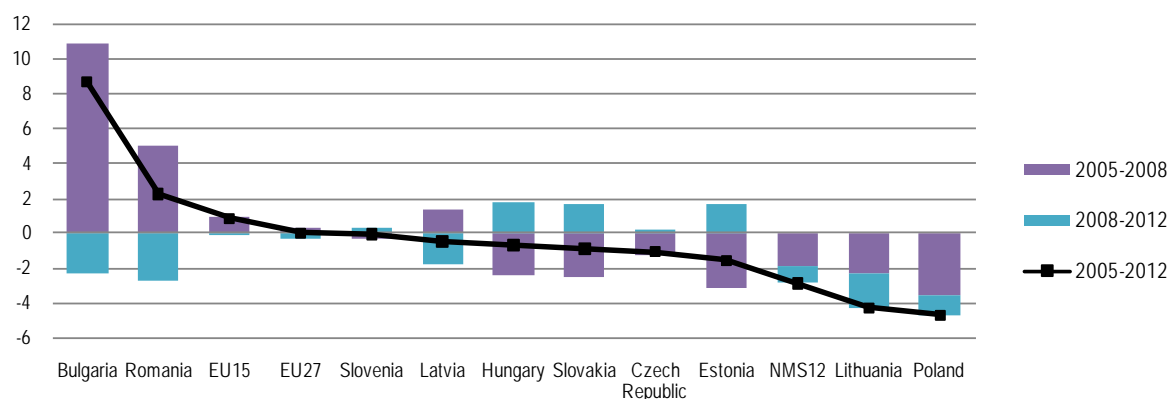
¹⁵⁰ According to the definition of the Eurostat at-risk-of-poverty rate is "the share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income (after social transfers)."

¹⁵¹ http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/data/database

¹⁵² Eurostat, Statistics by theme, Income and living conditions, People at risk of poverty or social exclusion, http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/data/database

new member states. Between 2008 and 2012 the highest increase within the ten countries was recorded in Hungary where the Gini coefficient grew from 25.2 to 28 per cent (Figure 11.).

Figure 11: Gini coefficient in the new member states
change in percentage point 2005-2012



Source: Own calculations on the basis of the Eurostat, Statistics by theme, Income and living conditions, Distribution of income¹⁵³

Conclusions

The statistical data prove that the growth of employment, the absolute and relative level of wages, the improvement of social conditions are possible in time of economic expansion, i.e. in time of successful reproduction of capital. However, the high rate of economic growth cannot be maintained for a long time, after the advent of the inevitable crisis or recession the improvement of labour market and social conditions usually have to be halted and withdrawn at least partially.

In capitalism, every country that aims to catch up with the more developed economies faces an enormous difficulty, namely that the increasing wages and social benefits during recovery become a burden on competitiveness of the capital in time inevitably. In this dilemma the basic requirement of the competitiveness, i.e. profit making, appears. According to this requirement unit labour cost both on company and national economic level has to be tendentially decreased, meaning that the share of labour in value added has to be decreased after recovery ends.

The labour market and social conditions improved in the EU10 in the first half of the last decade, when an extensive growth has taken place in the region. Since the beginning of the crisis in 2008 this trend has been broken. The statistical data show some convergence between the more and less developed countries of the EU regarding wages and standard of living on average. The convergence is a result of the decrease of the wages relative to the GDP in the more developed countries and the increase of the wages per GDP in the less developed ones. The latter is the consequence of the extensive development that the international division of labour that is determined by the needs of the reproduction of capital results on the peripheral and semi-peripheral countries.

¹⁵³ http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/data/database

Similarly, thanks to the increasing wages and social benefits inequality has been reduced in most of the EU10 countries whereas it was on the rise in the majority of the developed EU-countries already in time of the boom before the crisis. The convergence in this respect does not mean improving distribution in all countries either. It means rather a convergence towards a mean value between the values of the two groups of countries (EU10, EU15).

According to the logic of competitiveness, however, this pattern of convergence, where the higher indicators decrease and the lowers increase, cannot be maintained on the long run. On the long run the reproduction of capital requires decreasing unit labour costs, i.e. falling compensation of employees and social benefits in GDP *everywhere*.

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Human capital in EU10 countries: Changes in education and research and development

István Kőrösi

In the 21st century, human capital, the quality of the human resources have become a significant element of development. In narrow sense the development of human capital means the training of high-performing and high skilled labor-potential, and also the creation and development in chain of the following territories: education – science-policy – research; development – invention – innovation. In wider sense it includes the shaping of the value-creating potential of the whole workforce, an important part of which is the development of skilled staff through training and education. The development of human capital with rational, perspective planning and adequate funding might play a decisive role in catching up with the global economy. At least two main areas must be rapidly developed to make use of human potential: education and research and development (R&D), because these are the basis of the development. The creation of human capital is first of all not a quantitative, but a qualitative process. Hungary for example was way ahead in the field of human resources for a long time (in the beginning of the 21st century, between the two world wars and beyond), skilled workers and inventions compared to its general economic development. In the second decade of the 21st century, EU10 countries - including Hungary - do not reach the requirements of our times, but they are far from exploiting their intellectual potential, due to the quality of their education and the lagging behind of scientific results in their economies.

This study is primarily an investigative, analytical comparison. The reason for that is that R&D and educational expenditures are based on the economic and solvency situation of a country. Nevertheless the change of these shares is the result of economic policy decisions, that is how much one country spends on these areas. All countries are keen on spending more to develop these always important and recognized fields, but due to budget deficit, financial barriers set narrow limits. Also in the case of crises, the human capital-intensive areas like the healthcare system, education and R&D suffer. There are only a few historical exceptions like Hungary and Finland between the two world wars. They spent the most in world comparison – 15% of its GDP - on education and scientific research. (This is not directly comparable to today's GDP figures, but it would be more than 10% of GDP in current prices).

The human capital potential and scientific research are determined by long-term conditions and trends. We can only assess the present situation based on historical capabilities, and the impact of contemporary development in a long time horizon, at least 5-10-15 years later. (The now graduated student will get degree within 5-6 years, about 8-9 years for a PhD, and to become a scientific researcher plus 10-15 years.)

Concerning R&D, the EU had to face major changes in this field from the millennium. It became increasingly apparent that the intensification of globalization (which was accompanied by continued market liberalization) sovereignty of the economic policy and the technology policy has declined and there is a gradual loss of national control. The EU member countries tried to balance it, instead of macroeconomy (the main element of which was also placed on the supranational level, due to EMU) they promote microeconomy and companies in the competition. The large number of TNCs in the EU encourage governments and the EU at the same time, to

support the innovation capacity of SMEs, who serve TNCs. This could be the new aspect of technology policy. With the enlargement of the EU the community's R&D potential has significantly increased. The reason of this phenomenon is not the rise in governmental expenses, but the scientific capacities and the number of R&D area working staff within the EU10 countries.

Table 1: Total public expenditure on education as % of GDP, for all levels of education

	2000	2004	2005	2010	2011
European Union (28 countries)	:	4.95(e)	4.92(e)	5.41(e)	5.25(e)
European Union (27 countries)	4.91(s)	4.95(e)	4.92(e)	5.41(e)	5.25(e)
Bulgaria	3.88	4.40	4.25	4.10	3.82
Czech Republic	3.83	4.20	4.08	4.25	4.51
Estonia	5.57(i)	4.92	4.88	5.66	5.16
Croatia	:	3.87	3.98(d)	4.31(d)	4.21(d)
Latvia	5.64	5.12	5.14	4.96	4.96
Lithuania	5.63	5.17	4.88	5.36	5.17
Hungary	4.50	5.44	5.46	4.90	4.71
Poland	4.87(i)	5.41(d)	5.47(d)	5.17(d)	4.94
Romania	2.88	3.28	3.48	3.53	3.07
Slovenia	:	5.74	5.73	5.68	5.68
Slovakia	3.92(i)	4.19(d)	3.85(d)	4.22(d)	4.06(d)

: =not available; e= estimated; s= Eurostat estimate; i= see metadata; d=definition differs; see metadata

Source: Eurostat

Table 2: Total public expenditure on education
Million Euro PPS

	2000	2004	2005	2007	2010	2011
European Union (28 countries)	:(u)	534,765.1(e)	555,912.9(e)	610,557.3(e)	662,028.3(e)	663,029.3(e)
European Union (27 countries)	:(u)	532,677.2(e)	553,644.7(e)	607,854.9(e)	659,311.3(e)	660,293.4(e)
Bulgaria	1,715.8	2,551.4	2,695.1	2,976.4	3,328.1	3,278.5
Czech Republic	5,313.1	7,245.4	7,427.7	8,646.8	8,709.1	9,530.3
Estonia	710.9(i)	825.2	908.6	1,107.2	1,183.9	1,200.3
Croatia	:	2,087.9(d)	2,268.1(d)	2,702.4(d)	2,717	2,735.9
Latvia	904	1,164.9	1,279.6	1,597.3	1,401.9	1,534
Lithuania	1,547.3	1,948.2	1,990.1	2,322.1	2,486	2,609.5
Hungary	4,896	7,486.4	7,812.4	8,159.7	7,890.6	7,922.1
Poland	17,517(i)	22,572.9	24,030.9	25,431.3	30,686.2	31,154.9
Romania	3,242	5,246.6	5,907.4	9,484.1	8,846.2	7,970.6
Slovenia	:	2,146.5	2,249.2	2,297.2	2,397.1	2,469.7
Slovakia	2,121(d)	2,780.9(d)	2,803.1(d)	3,306(d)	4,156.9	4,140

: =not available; u=low reliability; e=estimated; i=see metadata; d=definition differs, see metadata

Source: Eurostat¹⁵⁴

¹⁵⁴ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tps00158HTMLDesc_09a1da4a-f8f6-453e-90c5-f53171b898ef.htm#

The spending on education and training as the ratio of GDP is the major indicator if we want to know how much attention the state pays to public education. From post-transition EU member states, Slovenia spends most on education relative to the GDP, even more than the EU average. Lithuania and Estonia spend permanently more than 5% of the GDP on education, their educational potential is developing. Poland and Hungary are in the middle level. Interestingly, the Czech Republic spends relatively little on public education. The catching up of Romania and Bulgaria is hindered by the low rate of public expenditure on this field. The extremely low ratio of these two countries has declined in comparison with the mid-2000s period. Only Estonia and the Czech Republic have increased the ratio of their public education expenditures if we compare 2000 to 2011, but in the other analyzed countries we observe decrease in the same timeframe (see Table 1).

The total spending on public education differs from what we would expect based on the economic potential of countries and the number of students. Educational expenditure in absolute terms indicates the input size of performance. Based on the whole population, the number of students and the budget, Poland, Czech Republic, Romania and Hungary rank first in absolute value of expenses. The other EU10 countries have lower levels of expenditure, because of low student numbers. Between 2000 and 2011, the public education expenses rose in the region, in case of Hungary and the Czech Republic this happened during 2000-2004, but in the other analyzed countries generally after 2004. In Hungary and in Romania, the governmental subventions declined due to the economic crisis in the period 2007-2011, but in all the other countries, subventions increased (see Table 2).

Table 3: Annual expenditure on public and private educational institutions compared to GDP per capita

By level of education - based on full-time equivalents (% - based on full-time equivalents)

	2000	2004	2005	2006	2010	2011
European Union (28 countries)	:	24.6(e)	25.2(e)	25.1(e)	28(e)	26.9(e)
European Union (27 countries)	:	24.6(e)	25.2(e)	25.1(e)	28(e)	26.9(e)
Bulgaria	23.4	24.2	23.7	23.6	24.6	23.2
Czech Republic	19	21.7	21.3	23.3	23.6	25
Estonia	:	:	20.4	20.4	27.2	25.5
Croatia	:	:(u)	:(u)	:(u)	25.7	25.7
Latvia	25.6	24	24.3	24.7	26.8	26.5
Lithuania	:(i)	21.1	19.9	20.2	25	24.3
Hungary	:(u)	26.7	26.7	26.8	:(z)	:(z)
Poland	21.8(i)	24.8(d)	26.6(d)	24.8(d)	29.1(d)	28.4(d)
Romania	:	:	18.3	:(u)	18.7	17.5
Slovenia	:	29.5	30.5	30.4	32.4	32.3
Slovakia	17.7	21(d)	19.9(d)	19.6(d)	23.3(d)	22.5(d)

:=not available; e=estimated; i=see metadata; d=definition differs, see metadata; u=low reliability; z=not applicable; b=break in time series

Source: Eurostat¹⁵⁵

¹⁵⁵ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tps00069HTMLDesc_fc8729-6816-4e8c-a682-ef1259006ca8.htm#

Table 3 provides an overview of spending on public education from public and private resources in relative proportion of GDP per capita. It is based on the annual expenditure of educational institutions. Indeed it means how much of the GDP per capita will be invested in education. In 2004, the EU-28 spent 24,6% of its GDP on these aims, and by 2010, this increased to 28%, but in 2011, it decreased to 26,9%. The rank of countries in 2004 was the following: Slovenia, Hungary and Poland, in 2011 Slovenia was also the first, but Poland and the Baltic states caught up. Hungarian data for 2010-2011 are not available. In Romania and Bulgaria, educational expenditure declined compared to the 2005 GDP per capita ratio.

Table 4: Annual expenditure on public and private educational institutions per pupil/student
PPS based on full-time equivalents

	2000	2004	2005	2010	2011
European Union (28 countries)	:	5,455.2(e)	5,643.1(e)	6,908.9(e)	6,846.4(e)
European Union (27 countries)	:	5,476.8(e)	5,662(e)	6,933.9(e)	6,869.2(e)
Bulgaria	1,266.9	1,806.4	1,948.5	2,655	2,713.4
Czech Republic	2,571.9	3,663.6	3,790.5	4,600.4	5,032.2
Estonia	:	:	2,818.8	4,242.6	4,426.1
Croatia	:	:(u)	:(u)	3,766.2	3,901.9
Latvia	1,817.6	2,415	2,702.2	3,608.4	3,987.9
Lithuania	:(i)	2,354.7	2,446.1	3,738.3	4,044
Hungary	:(u)	3,635.1	3,793.4	:(z)	:(z)
Poland	1,970.5(i)	2,717.7(d)	3,061.5(d)	4,483.6(d)	4,640.6(d)
Romania	:	:	1,437.2	2,132.5	2,074.6
Slovenia	:	5,526.5	5,995.5	6,676.7	6,781.7
Slovakia	1,686	2,588.9(d)	2,689.1(d)	4,235(d)	4,262.2(d)

:=not available; e=estimated; i=see metadata; d=definition differs, see metadata; u=low reliability; z=not applicable; b=break in time series

Source: Eurostat¹⁵⁶

The data of Table 4 partially correlate with economic development, partly indicating educational expenditures of states. It is interesting to observe that in the EU10 countries, educational spending per student is deeply under the EU-average. (In Slovenia the situation is favorable.) The Baltic states, Poland and the Czech Republic made significant effort to improve their own educational area and the expenditure per student ratio since 2000 and from the EU accession. Regarding educational expenditure, the catching up will be hard, because of the deep gap between the EU-average and these countries. Data are available only until 2011, but the prominence of Slovenia and the Czech Republic is clear. The database of Slovakia and Poland are not comparable to the other countries data, because of definition differences. Bulgaria and Romania are at the end of the list in the EU, regarding this comparison.

¹⁵⁶ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tps00067HTMLDesc_fe0f02d7-62fc-42d9-974b-cd237bf7f82e.htm#

Table 5: Tertiary education participation
Trends in the number of students (ISCED 5-6) (1 000)

	2000	2004	2005	2010	2011	2012
European Union (28 countries)	:	18,359.2	18,664.8	19,991.1	20,283.3	20,245.9
European Union (27 countries)	15,920.8	18,232.9	18,530.2	19,841.2	20,129.3	20,088.6
Bulgaria	261.3	228.5	237.9	287.1	285.3	285.0
Czech Republic	253.7	318.9	336.3	437.4	446.2	440.2
Estonia	53.6	65.7	67.8	69.0	69.1	67.6
Croatia	:	126.3	134.7	149.9	154.0	157.3
Latvia	91.2	127.7	130.7	112.6	103.9	97.0
Lithuania	121.9	182.7	195.4	201.4	187.1	175.1
Hungary	307.1	422.2	436.0	389.0	381.9	380.8
Poland	1,579.6	2,044.3	2,118.1	2,148.7	2,080.3	2,007.2
Romania	452.6(d)	685.7	738.8	999.5	871.8	705.3
Slovenia	83.8(d)	104.4(d)	112.2	114.9	107.1	104.0
Slovakia	135.9	164.7	181.4	234.5	226.3	221.2

: =not available; d=definition differs; see metadata

Source: Eurostat

Table 6: Population with tertiary education attainment
Percentage, ISCED97: First and second stage of tertiary education (levels 5 and 6)

	2000	2004	2005	2010	2011	2012	2013
European Union (28 countries)	:	19.1	19.6	22.7	23.6	24.5	25.3
European Union (27 countries)	17.1	19.1	19.7	22.8	23.7	24.6	25.4
Bulgaria	15.1	17.9	17.8	19.4	20.1	20.7	22.2
Czech Republic	9.5	10.4	11.0	14.5	15.8	17.0	18.1
Estonia	24.1(b)	25.6	27.7	30.0	31.3	32.1	33.2
Croatia	:	13.2	13.4	15.5	15.3	15.7	16.5
Latvia	15.1	16.7	17.1	22.6	23.6(b)	25.2	27.0
Lithuania	35.3(d)	21.6	22.4	26.9	27.9	28.6	29.8
Hungary	11.7	14.2	14.5	17.2	18.1	19.0	19.5
Poland	9.2(b)	12.8	13.9	19.4	20.3	21.5	22.6
Romania	7.5	8.7	9.1	11.9	13.0	13.6	13.9
Slovenia	12.9(b)	15.7	16.7	20.2	21.6	23.0	24.4
Slovakia	8.2	10.4	11.4	15.1	16.4	17.0	17.7

: =not available; b=break in time series; d=definition differs, see metadata

Source: Eurostat

The number of participants in higher education is the index of future human capital potential (Table 5). This indicator significantly correlates with the evolution of the given population, while forecasts the future high-skilled labor potential. Most of the young people study in higher education in Poland and Romania (in 2012, more than 2 million, and 700 thousand students). Number of students in higher education increased dynamically during 2000-2005 in each country. However, after the crisis, the number of students in higher education started declining except for Croatia and the Czech Republic, but in 2012 there was a decline in the Czech Republic too. The largest decline was reported in Romania, with nearly 300 thousand losses. In Hungary, the number of students in

higher education was lower by approximately 60 thousand from 2005 to 2012. The decrease is explained partly by demographical changes, but the main reason was the reduction of state funded higher education and the increase of tuition fees paid by the students. Due to the crisis, the financial capacities of poorer families were significantly reduced, which could only be partly compensated with grants.

In the transition countries, the ratio of tertiary educated people within the active population is very different (Table 6). In the Baltic countries, especially in Estonia, the number of tertiary graduated citizens is higher than the EU-28 average. Estonia had outstanding successful efforts in this area, it increased its higher educated population from one-fourth to one-third between 2004-2013. Slovenia is just a little under the EU- average, with Bulgaria and Poland, they are between 20-25%. The number of graduated citizens is less than 20% of the population in the Czech Republic, Slovakia and Hungary. The situation is the worst in Romania, with its 13,9%.

Table 7: Tertiary graduates in science and technology per 1 000 inhabitants aged 20-29 years

	2000	2001	2004	2005	2010	2011
European Union (28 countries)	:	12.4	13.2	15.4	:	17.1(d)
European Union (27 countries)	10.6(e)	12.5(e)	13.2	15.4	17	17.1(d)
Bulgaria	7.5	8.5	8.6	12.1	12.4	13.3
Czech Republic	5.6	7.4	8.3	16.9	16.6	16.7
Estonia	8(d)	8.9	12.2	12	12.7	13.2
Croatia	:	5.8	6.1	12.3	:	17.4
Latvia	7.6	9.7	10.2	12.1	12.8	13.5
Lithuania	14.8	18.1	19.8	21.8	22.6	23
Hungary	3.7	5.1(d)	5.1	8.3	8.5	9.5
Poland	7.6	9.4	11.1	15.8	17.5	17.9
Romania	4.9(d)	10.4	11.1	18.8	19.3	18.7
Slovenia	8.2	9.3	9.8	14.8	17.4	19.3
Slovakia	7.5	9.3	10.2	18.7	18	17.9

:=not available; d=definition differs, see metadata; e=estimated; u=low reliability

Source: Eurostat¹⁵⁷

Table 7 shows how many from 1000 young people - aged 20-29 - get scientific, technical or mathematical education. Lithuania has the highest level, Romania, Poland, Slovakia follow it. Bulgaria and Hungary are at the end of the list regarding scientific and technical university degrees. Between 2001-2011, the EU-average of the number of science and engineering graduates increased by 70%, but in Slovenia, Slovakia and Poland the increase was even more pronounced than the EU-average. The same ratio doubled in Hungary from 3.7% to 9.5%.

¹⁵⁷ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tps00188HTMLDesc_985d9823-aab9-4ecf-bac1-cbf2e09643dc.htm#

Table 8: Doctorate students in science and technology fields
Percent of the population aged 20-29 years

	2000	2004	2005	2010	2011
European Union (28 countries)	:	:	:	:	:
European Union (27 countries)	:	:	:	:(u)	0.49(e)
Bulgaria	0.11	0.19	0.2	0.16	0.15
Czech Republic	0.45	0.73	0.79	0.84	0.87
Estonia	0.23	0.36	0.39	0.56	0.62
Croatia	:	0.04	0.06	0.26	0.28
Latvia	0.13	0.13	0.13	0.19	0.28
Lithuania	0.16	0.23	0.24	0.23	0.31
Hungary	0.1	0.17	0.17	0.17	0.18
Poland	0.14	0.19	0.19	0.19	0.21
Romania	:	0.14	0.23	0.31	0.31
Slovenia	:	:	0.17	0.43	0.58
Slovakia	0.32	0.4	0.43	0.5	0.55

:=not available; u=low reliability; e=estimated

Source: Eurostat¹⁵⁸

The proportion of scientific and engineering Ph.D students compared to the EU average in the 20-29 age group in 2011 was 0.49%. Among the transition countries, this ratio is highest in the Czech Republic, between 2000-2011 it almost doubled to 0.87%. Estonia has also increased the number of its Ph.D. students from 0.23% to 0.62%. In Slovenia and Slovakia, the proportion of Ph.D students are above the EU-average, thanks to their special attention to doctoral programs. Compared to 2005, there is a significant increase of Ph.D student numbers except Hungary, Poland and Bulgaria, where during this period there was further decline in the ratio. So in these countries are number of Ph.D students is the lowest (see Table 8).

Table 9: Academic staff of tertiary education

	2000	2004	2005	2010	2011	2012
Bulgaria	24,620	20,944	21,102	20,855	20,648	22,955
Czech Republic	20,010	:	24,298	16,656	18,002	17,476
Estonia	5,707	6,630	:	:	:	:
Croatia	:	7,917	8,764	15,721	16,319	:
Latvia	5,213	5,716	6,268	6,924	6,340	6,435
Lithuania	12,726	13,415	13,157	14,116	13,926	13,923
Hungary	21,249	24,708	25,413	24,596	22,697	24,279
Poland	85,971	:	95,144	102,595	102,621	101,407
Romania	26,977	30,137	30,857	31,103	29,746	28,365
Slovenia	2,491	4,143	4,475	6,947	7,214	7,348
Slovakia	12,211	12,635	12,709	13,333	13,080	12,887

:=not available

Source: Eurostat

¹⁵⁸ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tsc00028HTMLDesc_6a7112c7-f5cc-4f37-a320-01759525547b.htm#

The effectiveness of higher education largely depends on the number and quality of academics (Table 9). The number of academic staff is the largest in Poland, Romania, Hungary and the Czech Republic. Poland has more than 100 thousand academics, Romanian number is almost 30% and Hungarian figure is 24% of the Polish result. This indicator shows only the absolute potential, but the effectiveness depends on the quality of teachers, their teaching skills, the quality of the whole higher education, the level of organization in the higher education and the capacity of students. The changes of academic staff were largest in proportion in Slovenia, between 2000-2012, from 2491 person to 7348 person. In the same period, there was a decline in teachers' number in the Czech Republic, Hungary and Romania. However, in Slovakia there was stagnation. There is no data available on Estonian academics since 2004. In Croatia the number of academics almost doubled from 7917 (2004) to 16319 (2011).

Table 10: Employed persons with attainment of tertiary education

Employed persons, percentage, Age: From 15 to 64 years ISCED97: First and second stage of tertiary education (levels 5 and 6)

	2004	2005	2010	2011	2012	2013
European Union (28 countries)	24.7	:	29.0	30.0	31.0	32.0
European Union (27 countries)	24.7	25.3	29.1	30.0	31.1	32.1
Bulgaria	25.5	25.7	27.1	27.9	28.5	30.1
Czech Republic	13.8	14.4	18.1	19.5	20.7	22.1
Estonia	33.0	35.8	38.4	37.9	38.9	39.9
Croatia	19.4	19.4	22.4	22.2	23.4	24.8
Latvia	21.8	22.9	31.0	32.4	34.1	34.9
Lithuania	28.4	30.7	39.9	40.4	40.1	40.9
Hungary	20.5	21.1	24.2	25.5	26.1	26.3
Poland	19.6	21.4	27.2	28.1	29.5	31.0
Romania	12.4	13.2	16.7	18.3	18.6	19.0
Slovenia	20.4	21.9	26.5	28.6	30.1	31.8
Slovakia	15.0	16.4	20.0	21.2	21.3	22.1

:=not available

Source: Eurostat

The number of people with tertiary education compared to the employed ones, indicates the quality of the workforce, and its value creation abilities (Table 10). This ratio rose in the EU between 2004-2013 from one-fourth to almost one-third. Unfortunately the proportion of high-educated people does not show the quality, the creativity and value creation ability of the graduated. Despite this, it is worth analyzing the database, however the comparison is limited, because of trainings, which are qualified as higher education courses. In the Baltic countries the ratio of graduated people is extremely high, in Estonia and Lithuania 40%, in Latvia 35%, and these are higher than the EU-28 average. In these countries the proportion of graduates and post-secondary vocational trainings was relatively high before the transition. Regarding the latter information, the situation is similar in Bulgaria. The graduated employment level is high in Slovenia and also in Poland. Hungary, Slovakia, the Czech Republic and Croatia are standing in the middle rank, with their 20-25%. In Romania, the ratio is less than one-fifth, but this result could be achieved after a significant increase between 2005 and 2013.

Table 11: Research and development expenditure
percent of GDP

	2001	2004	2005	2010	2011	2012
European Union (28 countries)	1.86(e)	1.82	1.82	2(e)	2.04	2.07
European Union (27 countries)	1.87(e)	1.83	1.82	2.01(e)	2.05	2.08
Bulgaria	0.46	0.49	0.46	0.6	0.57	0.64(p)
Czech Republic	1.16	1.2	1.22	1.4	1.64	1.88(p)
Estonia	0.7	0.85	0.93	1.62	2.37	2.18(p)
Croatia	:	1.05	0.87	0.75	0.76	0.75
Latvia	0.41	0.42	0.56	0.6	0.7	0.66(p)
Lithuania	0.67	0.75	0.75	0.79	0.91	0.9(p)
Hungary	0.93(d)	0.88(b)	0.94	1.17	1.22	1.3
Poland	0.62	0.56	0.57	0.74	0.76	0.9
Romania	0.39	0.39	0.41	0.46	0.5(b)	0.49
Slovenia	1.49	1.39	1.44	2.1	2.47(b)	2.8(p)
Slovakia	0.63	0.51	0.51	0.63	0.68	0.82

: =not available; e=estimated; p=provisional; b=break in time series; d=definition differs, see metadata

Source: Eurostat¹⁵⁹

The R&D expenditures of the EU member countries should achieve 3% of their GDP according to the Lisbon Strategy, created in 2000. Nowadays most of the EU member states are still far away from this goal (Table 11). The goal has been shifted to 2020 in the Europe 2020 Strategy. In 2012, the mentioned ratio was in the average of the EU-28 countries a little above 2%. R&D is one of the main pillars of the knowledge based society. At the turn of the millennium, the R&D expenditures/ GDP ratio was very low in post-transition countries. Only Slovenia reached 1.5% and the Czech Republic a bit above 1%. The post-transition countries have made significant efforts compared to their own data between 2001 and 2012. The most significant development in the field of R&D was achieved in Slovenia and Estonia, because both have R&D fundings above the EU-average (2,47% and 2,37%). The Czech Republic and Hungary also made progress, but with their 1,88%/ GDP and 1,3%/ GDP ratio, they are far from the EU-average. Since their accession to the EU - in 2004 and in 2007 respectively - their R&D expenses/ GDP ratio increased. The EU membership and also its R&D framework program offers important impulse to these countries. (Since 1999, Hungary is full member of those programs.) The lowest R&D levels are observed in Romania, Bulgaria and Latvia, but Poland's and Slovakia's results do not achieve the 1%/GDP ratio either.

According to international experiences, those countries are the most successful in the field of R&D, in which the business world and the companies participate in the financing (especially Japan, South-Korea, Sweden and Finland). The EU also encourages the business sector to fund R&D activities. It is surprising that this ratio of the EU-28 average has not increased since the millennium, and even in 2011 the data is lower than it was in 2001. In 2011, the participation of the corporate sector in the R&D finance was 54.9%. In this year, from the EU10 countries only Slovenia and Estonia reached the EU-average. In Slovenia, the share of corporate sector in the financing was 61.2%, in Hungary the same figure was 47.5%. In other post-transition countries, the participation of the corporate sector is around 30%, but in Lithuania, it is less than 30%. Surprisingly, between 2004 and 2012,

¹⁵⁹ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tsc00001HTMLDesc_4d8342c4-194d-4c53-b37c-61ae66af8032.htm#

in all the countries except for Estonia, Slovenia and Hungary, the financial contribution of companies in the R&D activities declined. Neither domestic, nor foreign companies provide enough power to stimulate R&D (see Table 12).

Table 12: Gross domestic expenditure on R&D (GERD) by source of funds
Business enterprise sector; % of total GERD

	2001	2004	2005	2010	2011	2012
European Union (28 countries)	55.8(e)	54.2(e)	54.1	53.7(e)	54.9	:
European Union (27 countries)	55.8(e)	54.2(e)	54.1	53.8(e)	54.9	:
Bulgaria	27.1	28.2	27.8	16.7	16.9	:
Czech Republic	52.5	52.8	48.2	40.8	37.7	36.4(p)
Estonia	32.9	36.5	38.5	43.6	55	51.2(p)
Croatia	:	43	34.3	38.8	38.2	38.2
Latvia	18.3	46.3	34.3	38.8	24.8	23.8(p)
Lithuania	37.1	19.9	20.8	32.4	28.2	26.1(p)
Hungary	34.8(d)	37.1(d)	39.4(d)	47.4	47.5	46.9
Poland	30.8	30.5	33.4	24.4	28.1	32.3
Romania	47.6	44	37.2	32.3	37.4(b)	34.4
Slovenia	54.7	58.5	54.8	58.4	61.2(b)	62.8(p)
Slovakia	56.1	38.3	36.6	35.1	33.9	37.7

: =not available; e=estimated; p=provisional; b=break in time series; d=definition differs, see metadata

Source: Eurostat¹⁶⁰

Table 13: Human resources in science and technology (HRST)
Percent of active population

	2002	2004	2005	2010	2011	2012	2013
European Union (28 countries)	:	:	:	40.3	42.3(b)	42.9	43.4
European Union (27 countries)	35	37	37.8	40.5	42.4(b)	42.9	:
Bulgaria	31.2	31.2	31.6	31.6	33(b)	32.6	33
Czech Republic	31.6	32.8	34.5	37.8(b)	35.6(b)	36.5	36.9
Estonia	40	41.5	44.8	45.2	47.3(b)	49.2	49.5
Croatia	27.6	27.9	28.2	32.1(b)	30.9(b)	32.3	34.5
Latvia	33.5(b)	31	32.7	38	38.2(b)	40.1	41.2
Lithuania	32.3(b)	34.6	37.4	42.7	43.6(b)	43.9	45.6
Hungary	29	31.8	31.6	33	34.6(b)	35.4	35.7
Poland	25.6	28.3	29.6	35.9(b)	36.6(b)	37.7	39
Romania	20.8(b)	21.2	22	24.4	25.8(b)	25.7	25.2
Slovenia	32.3	35.8	37.3	40.8	42.4(b)	42.8	43.5
Slovakia	28.5	28.8	30.7	33.5	33.9(b)	32.5	32.5

: =not available; b=break in time series

Source: Eurostat¹⁶¹

¹⁶⁰ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tsc00031HTMLDesc_89fb65fc-ed53-46f8-a242-ca77e1ddda09.htm#

¹⁶¹ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tsc00025HTMLDesc_da99e3e2-c888-4c45-92ae-72cb8952a0a8.htm#

The proportion of workers in scientific-technical fields in relation to the active population gives overview about the ratio of workers in the R&D sector, which is necessary for the development. (This number included the entire staff, not just R&D activists). In 2013, in the EU generally 43.4% of the labor forces worked in scientific-technical areas. Among EU10, this ratio is higher than the EU average in the Baltic countries and in Slovenia. Among V4 countries, the ranking is Poland, Czech Republic, Hungary and Slovakia. The lowest level was measured in Romania. Thanks to economic development, this ratio has become higher, however, between 2002 and 2013 only Slovenia and the Baltic states could improve their position significantly (Table 13).

Table 14: Total researchers (FTE)
All sectors; FTE: full-time equivalent

	2000	2004	2005	2010	2011	2012
European Union (28 countries)	:	1,314,471(e)	1,374,849	1,607,004(e)	1,628,443	1,661,499(e)
European Union (27 countries)	1,123,553(e)	1,307,331(e)	1,369,122	1,599,901(e)	1,621,596	1,654,812(e)
Bulgaria	9,217	9,827	10,053	10,979	11,902	11,295(p)
Czech Republic	14,987	16,300	24,169(b)	29,228	30,682	33,169(p)
Estonia	2,681	3,369	3,331	4,077	4,511	4,570(p)
Croatia	:	7,140	5,727	7,104	6,847	6,688
Latvia	3,497	3,324	3,282	3,896	3,947	3,904(p)
Lithuania	8,075	7,356	7,637	8,599	8,390	8,023
Hungary	14,666(d)	14,904(b)	15,878	21,342	23,019	23,837
Poland	56,148	60,944	62,162	64,511	64,133	67,001
Romania	19,726	21,257	22,958	19,780	16,080(b)	18,016
Slovenia	4,498	4,030	5,253	7,703	8,774(b)	9,093(p)
Slovakia	9,585	10,718	10,921	15,183	15,326	15,271

: =not available; e=estimated; p=provisional; b=break in time series; d=definition differs, see metadata

Source: Eurostat¹⁶²

Regarding the number of researchers, the EU has a strong potential, which grew even stronger after the millennium period (see Table 14). In 2001 1.12 million people worked in the EU as a researcher (full time employment), but in 2012 the number reached 1.65 million employees. Overall among the EU10, Poland, the Czech Republic and Hungary have the biggest researcher potential. In 2012 Poland had 67,000, the Czech Republic 33,000, and Hungary 24,000 researchers. The number of researchers – except for Romania – increased between 2001 and 2012, which could serve as a basis for the improvement of R&D, if other factors and inputs are also getting better. The Baltic countries and Croatia have the lowest number of researchers. Due to financial and economic crises, the number of researchers in Croatia and Lithuania fell.

¹⁶² http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tsc00004HTMLDesc_687c4708-d3c2-4b7f-9c3c-d3bb69ed3072.htm#

Table 15: European high-technology patents
Per million inhabitants

	2000	2004	2005	2010	2011
European Union (28 countries)	24.543	22.067	21.299	18.773	9.951(p)
European Union (27 countries)	24.771	22.259	21.483	18.93	10.036(p)
Bulgaria	0.173	0.263	0.838	0.067	0.136(p)
Czech Republic	0.482	1.317	1.492	1.496	1.753(p)
Estonia	0.121	1.464	3.584	9.66	5.889(p)
Croatia	0.073	0.325	0.425	0.504	:
Latvia	0.369	:	0.889	0.825	:
Lithuania	0.578	0.453	0.387	0.637	0.819(p)
Hungary	3.378	2.906	2.248	4.728	2.361(p)
Poland	0.117	0.545	0.603	1.621	0.829(p)
Romania	0.089	0.118	0.274	0.39	0.338(p)
Slovenia	2.148	1.503	1.952	4.621	1.868(p)
Slovakia	0.256	0.573	0.443	0.798	1.159(p)

: =not available; p=provisional

Source: Eurostat¹⁶³

The achieved results in the field of high-tech patents indicate the performance of the EU member states in R&D area. The evaluation of the number of patents could be followed in Table 15. In 2000, for 1 million European people 24,543 European high-tech patent were referred. Between 2000-2011, there was a negative tendency in the number of new patents. In 2000, the largest number of high-tech patents for 1 million people came from Hungary and Slovenia, while in 2010, Estonia, Hungary and Slovenia ranked first. Between 2000 and 2010, the Czech Republic and especially Poland had a significant patent activity in the high-tech field. Bulgaria, Romania and Lithuania have been the least active. It is important to emphasize that the Estonian, Hungarian, Slovenian and Czech researchers were able to connect effectively to international research programs, and to EU R&D framework programs. The other EU10 countries could reach less success in international dimension of high-tech research. The reason of this is that their small economic power, their R&D potential and financial capability do not allow them to implement capital-intensive, big projects. FDI could improve the results, but it has been spent only marginally on R&D in these countries.

The main instrument of the EU's R&D policy is the so-called Framework Programs, that finance specific, common collaboration based researches. The current 7th Framework Program has several successful projects and results, but severe problems and criticism also arise against them. The recognition of deficiencies of the European R&D activities is that in Europe, new technology creation capability is needed, and also the rapid application of new technologies. Therefore the future oriented technical innovation needs cooperation between developers and users of the new technologies.

The national research-development policy could cover only part of the innovation risks, therefore companies have to take part of the execution. In the EU, the main direction of technical-development policy is to secure more favorable frameworks, to improve the technical-economical development information supply, to promote the risk-management, and to give accurate information about the technical and market opportunities related changes.

¹⁶³ http://epp.eurostat.ec.europa.eu/tgm/web/_download/Eurostat_Table_tsc00010HTMLDesc_2993954a-d89d-43ed-a86b-59d167c51e3a.htm#

This is complemented by the encouragement of diffusion-oriented technical development. In this field the R&D framework programs of the EU play an important positive role.

The economic policy analyses forecast the improvement of the EU technical development positions, strengthening competitiveness in the world market through the improvement of the European innovation activity framework conditions, and the political environment. To enhance the technical development, they are looking forward to stimulate competition and fiscal policy, which are regulated in this area.

Conclusion

Demographic problems, the economic impact of aging and problems of the large service systems threat the long term stability of the pension system. This is connected to the development of the human resources, and its role, which determines the growth and financial balance, or lack of them.

In the EU10, among them in Hungary, large part of the human resources is well qualified, developed, but its effective utilization is far from the EU-average and from the consistent building of knowledge based society. The situation got worse with healthcare and educational problems. Due to these, the creation of knowledge based society, the realization of the Lisbon Strategy and its implementation is far. It can be worrying that many transition countries are affected by transitional crises dramatically. The R&D expenditures, their share to the GDP and to the budget has fallen significantly. The Lisbon Strategy envisages a 3% per GDP ratio for R&D expenditures. This is fulfilled only by the Scandinavian countries, the EU average is 1.8-1.9%, and there is not much progress. The same ratio in the USA is 3%, in Japan much more than 3%.

The R&D expenditures in Europe are only one-fourth of the innovation expenditures. Innovation would be effective in the market, if three times more R&D expenditures were spent to innovation. This proves that R&D is significant part of our development, but not a sufficient factor. Within the innovation expenditures, the weight of R&D fell, but on the other hand, the technology-development and production were raised. In the EU10 countries, it is absolutely necessary to strengthen the R&D sector, expenditures and to improve the efficiency of its improvement and effectiveness at the same time. Our R&D results should become competitive, which requires the creation of developed innovation chains.

The gap of the EU10 countries in the area of education, trainings are less than in their GDP per capita, they have advantages compared to the "old" member states. The strengthening of human capital in its quantitative and qualitative potential plays a major factor in economic recovery, therefore this area should be prioritized in the economic policy and expenditures. In general, increasing the length of education increases the productivity. Education, training of the human capital should play a key role in the recovery of the EU10 region and it should be the basis of growth together with the improvement of the workforce potential. However, for example in Hungary we can experience opposite tendencies.

International analyses and experts of the European Commission found the European R&D policy non-effective, mature for reforms. The EU10 countries must also have their own reform strategy.

The European Union has lagging development compared to the USA. The disadvantages of productivity and faster diffusion of innovation could be reduced by increasing the impact of information and communication technologies. The same is true for EU10 countries. The growth rate of investments in the EU10 states is

permanently higher than in the EU15 countries, but their structure should be corrected to converge towards the value added activities.

It is important to note that in the developed EU countries, GDP growth comes from the extremely highly productive non-financial services, mainly from R&D related to innovation and its support activities. In the EU10 countries, the economic policy promotion and the corporate strategies should also focus more on that.

The improvement of R&D expenditures, and ensuring the human resources for R&D are necessary, but far from sufficient. The improvement of the utilization of R&D expenditures and rapid introduction of its results is essential also in the EU10 countries. The handicaps of EU10 states are based on the slow implication of innovations. The improvement of the investment environment, the consistent economic policy have significant role in the recovery of EU10 countries, and among them, Hungary. Finally, countries have to emphasise the social impact and acceptance of new technologies.

Mobility from the EU10 - some considerations as seen by these countries: Remarks to the brain drain, brain waste or brain gain debate

Klára Fóti

Introduction

Whereas the impact of increased intra-EU mobility in the receiving countries has been high on the agenda since the two significant waves of enlargements (2004 and 2007), so far less attention has been paid to the perspectives of the sending countries. This happened despite the fact that some concerns have been raised also from their part.

The concerns are related to the fact that among the emigrants, young people are overrepresented, which has implications both from demographic and economic perspectives. Similarly to most EU15 Member States, population of the sending countries is also ageing; the recent economic crisis affected their economies, with serious social consequences in most cases (slow growth, high unemployment, increasing poverty rates and inequalities).

When the impact on the sending countries is analysed, it is important to distinguish between short-, medium and possible long-term effects. Whereas in principle short-term effects can be deducted from current developments, there is more uncertainty when either the medium or the long-term perspectives are assessed.

It may, however, prove challenging even to analyse the current situation. Not only do shortcomings of basic data make cross-country comparison difficult, for a clearer picture counterfactual analysis would be needed. In order to give an objective, impartial assessment, it would be important to find the right balance between the positive and negative effects; for example, such important questions should be answered whether unemployment would be higher in the sending countries if emigration did not occur.

The available data show that whereas the education level of mobile EU citizens tends to be high, the majority are employed in low-skilled occupation. This may suggest that the motivation behind emigration could not only be earning higher income, but possibly also to escape from unemployment. Related to the gap between educational attainment and occupation level, it is relevant to ask whether this could be a long-lasting phenomenon or there are signs for improvement.

Despite the general tendency of EU10 migrants having low-skilled occupation, if certain professions are considered, such as health specialists (doctors), this is definitely not the case. As regards the emigration of highly specialised doctors and the ensuing shortages in that profession in the sending country (as demonstrated for example by Eurofound, 2013), even some signs of brain drain can be detected. In this case, the question is whether there could be a chance of their return in the future. The extent of potential return (and possible brain gain) depends to a large extent on economic perspectives of the sending countries. So far, return migration has not happened on a massive scale (Eurofound, 2012) presumably because the impact of the crisis could be felt strongly in most of the sending countries (Poland seems to be an exception as regards the strong effects of the crisis, but even here, scale of return migration is unknown due to deficiencies of the related data). Therefore, it is

not surprising, that currently there is hardly any evidence for brain gain. Some country variation can be observed, however, also in this regard. For example, in case of two small countries, Slovenia and Estonia, among the returnees, students constitute the largest group. If the majority of the members of this group stay in the country at least for some time, the countries could benefit from the knowledge the students acquired abroad. Even nowadays, however, an increased circularity (circular movement) can be observed in intra-EU mobility. This is likely to persist and expand in the future.

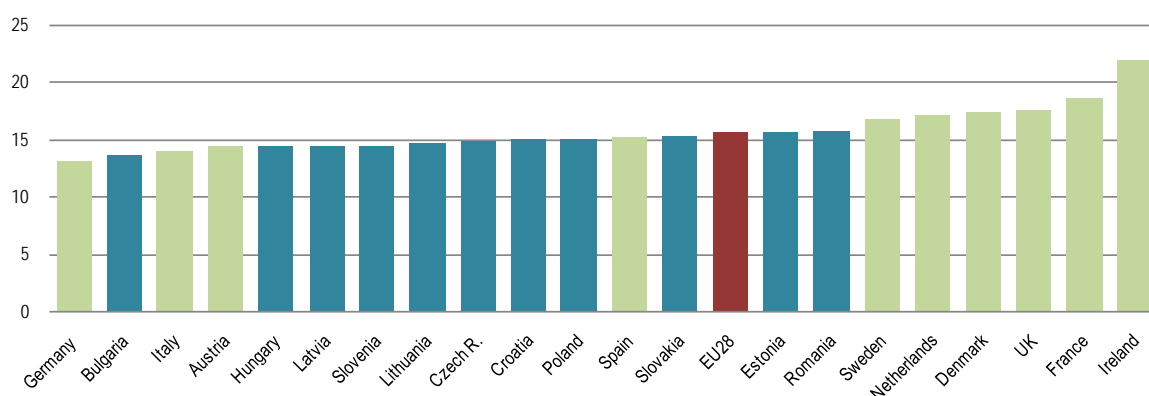
The study analyses mainly the sending countries' perspectives, focusing first on demographic data compared with those of the main destination countries. In order to get some idea about the issue of possible brain drain, brain gain or brain waste, the second section outlines some key characteristics of the EU10 mobile citizens, and the third is concerned with their current labour market performance. Finally, the conclusions focus on possible future perspectives.

Demographic background – key features in the sending countries

If perspectives of the sending countries are considered, potential of future work force and sustainability of the welfare system (especially pensions) should be analysed – both current age composition and fertility rates are certainly relevant from this point of view.

As can be seen from Figure 1 below, it is precisely the sending countries, where share of the youngest age group (below 15 years of age) is usually the lowest. There are exceptions, however: among the sending countries these are Romania and Estonia (the share in both being about 16%) whereas among the traditional receiving countries Germany and Austria (the share being 13% and 14% respectively) as well as the new receiving countries, such as Italy and Spain (about 14% and 15%, respectively).

Figure 1: Share of population below 15 years of age in EU28, EU10 plus Croatia and some key destination countries



Source: Own calculations, based on Eurostat data

It seems obvious that part of the explanation for the divide between the Member States lies in presence/dominance of third country nationals in certain countries. This may explain the relatively high share in the former colonial powers (such as the UK, France and the Netherlands), whereas in Denmark and Sweden high

number of refugees could be attributed to that. Ireland is a special case: as is well known, it has the youngest population in the EU.

As regards the sending countries, however, even if the share of the youngest age group is higher in Slovakia or Romania than in some receiving countries (i.e. Germany, Italy, Austria or Spain), if the pace of current emigration continues, it is doubtful whether this relatively high share can be preserved.

To some extent, a similar pattern is shown when the total fertility rates are examined. As can be seen from Table 1, in none of the EU countries did the indicator reach such a level which would make the so called simple reproduction possible – as is known, this is 2.10 (the indicator shows the average rate of child birth per women of child-bearing age, i.e. 15-49 in a country in a given year) This is true even for those two EU Member States which are known as having relatively high fertility rates, i.e. Ireland and France. Fertility rates in EU10 are usually lower than in EU27/28 average, the exceptions being Lithuania (interestingly) and Slovenia in 2012. However, in neither of them is higher fertility rate a long-term pattern. It is rather Estonia, which could be regarded as a real exception, where even longer trends (between 2005 and 2011) show a more favourable perspective. At the same time, in most EU15 countries, the fertility rate is higher than the EU average. The exceptions again are Germany, Austria, Italy and Spain. In one of the most important destination country, in the UK, however, fertility trends have constantly improved, from 1, 70 to 1, 92. It may well be that the recent increased inflow from the East-European Member States has contributed to the improvement.

As is clear from Table 1, however, there are fluctuations in many countries, and as regards demographic trends, straightforward conclusions could be drawn from a long-term perspective. The fluctuations during this short term period show that country-specific demographic features, such as age composition, are playing also an important role. This varies quite a large extent across the EU, which is reflected in Table 2. The data give quite a mixed picture even on the changes of share of prime working age groups in the total population.

As can be seen, although at EU average level, the share of all the younger age groups decreased between 2004 and 2013 (just the eldest one, 44-49 years, it increased), this did not happen in any of the countries listed in the table. It is only in France where a drop was experienced in case of all the age groups (although in the eldest one it was minimal). Share of the two youngest age groups, however, declined in almost all EU10 countries (with the exception of Lithuania, but even here its absolute number decreased during the last two years compared to the previous period, and its share increased only because the total population dropped even more than the number of people in the age group of 20-24 years).

Some countries experienced quite a large drop in share of certain age groups: for example even in Estonia, where both the share of the population below 15 years and the fertility rate show a favourable pattern, the decline in the youngest working age group (15-19 years) is very high and this is a result of a continuous decrease since joining the EU. This may not reflect, however, high number of Estonian workers abroad, rather the fact that large numbers of students studying mainly in Finland.

Among the EU10 countries, Hungary and the Czech Republic experienced a large drop in case of the age group of 25-29 years (regarded in many statistics as young people). The difference is, however, that whereas in the Czech Republic this is a result of a gradual decrease (with an annual decline of around 20 thousand or less), in case of Hungary a sudden, large drop of almost 70 thousand could be witnessed. Since, as mentioned, natural demographic trends are reflected in long-term developments; this sudden decrease could hardly be attributed to natural trends, rather to high emigration of the age cohort.

Table 1: Change of share of the prime working age groups in the total population of the respective countries between 2004 and 2013 (percentage points)

	15-19	20-24	25-29	30-34	35-39	40-44	45-49
European Union (28 countries)	-0.83	-0.49	-0.51	-0.56	-0.74	-0.12	0.39
European Union (27 countries)	-0.83	-0.49	-0.51	-0.57	-0.75	-0.12	0.40
Belgium	-0.17	0.12	0.07	-0.41	-1.09	-0.74	0.06
Bulgaria	-2.12	-0.79	-0.84	-0.17	1.05	0.39	-0.55
Czech Republic	-1.60	-0.93	-2.12	0.20	2.13	0.77	-0.47
Denmark	0.93	0.89	-0.86	-1.26	-1.22	-0.31	0.79
Germany	-0.78	0.04	0.47	-0.70	-2.86	-1.09	1.40
Estonia	-2.67	-0.23	0.28	-0.27	0.25	-0.35	-0.72
Ireland	-1.46	-2.60	-0.89	0.44	0.44	0.37	0.38
Spain	-0.92	-1.96	-2.54	-0.62	0.46	0.64	1.16
France	-0.55	-0.40	-0.20	-0.89	-0.89	-0.24	-0.02
Croatia	-0.46	-0.75	-0.03	0.47	-0.29	-0.84	-0.65
Italy	-0.22	-0.43	-1.55	-1.72	-0.76	0.45	1.38
Latvia	-3.17	-0.18	0.58	-0.39	-0.07	-0.60	-0.24
Lithuania	-1.51	0.28	0.00	-1.21	-0.93	-0.84	0.43
Hungary	-0.60	-0.72	-2.34	0.11	2.05	1.12	-1.50
Netherlands	-0.06	0.34	-0.11	-1.70	-1.96	-0.39	0.42
Austria	-0.25	0.10	0.28	-0.94	-2.20	-0.62	1.37
Poland	-2.37	-1.56	0.33	1.51	1.40	-0.66	-2.04
Romania	-2.32	-0.88	-1.20	-0.54	0.55	2.09	-1.29
Slovenia	-1.66	-1.63	-0.83	0.39	-0.23	-0.62	-0.31
Slovakia	-2.08	-1.32	-0.74	1.07	1.47	-0.30	-0.90
Sweden	-0.26	1.19	0.18	-0.60	-0.96	0.58	0.57
United Kingdom	-0.32	0.44	0.59	-0.57	-1.60	-0.36	0.79

Source: Own calculations, based on Eurostat data

Among the receiving countries, large drop is not observed in case of the younger age groups. There are two exceptions: Ireland and Spain, two EU15 countries, which are known of not only having large inflow of EU mobile citizens, but also large emigration of young people from there. In Ireland although the decline of the youngest age group reflects a continuous decrease, the large drop in the share of the next age group (20-24) is most likely to be attributed to the effects of the crisis: there was a continuous increase in their absolute number until 2008 (from 336 thousand to 373 thousand), in 2009 their number declined by almost 14 thousand, and during the whole period the decrease amounted to 73 thousand. Apart from the effects of possible natural demographic developments, the large drop can certainly be traced back to high emigration of native young people due to deteriorating labour market conditions in the wake of the crisis. The same seems to apply to the next age group (25-29 years) in Spain, the drop of which was similarly high as that of the previous age group in Ireland. Although the number of people of the age group did fluctuate between 2004 and 2007, from 2008 on, there has been a clear trend of an annual decrease of more than 100 thousand. Apparently, in none of these two countries could the inflow of EU mobile citizens compensate for the large decrease in share of the respective age groups (all the less so since this inflow slowed down precisely during this period, i.e. after 2008). From the above changes, similar developments seemed to happen in Italy, though to a lesser extent and in case of older age groups.

Despite these exceptions and the mixed picture, there seems to be a division between the EU15 and EU10 countries also in recent changes of prime working age composition of the population. Even if natural demographic developments (natural decrease/increase related to fertility and mortality rates, average life expectancy at birth within the respective countries) certainly influence the age composition, it can be assumed that large decline in the share of the younger age groups is due to high emigration of young people from these countries. This is reflected in the fact that the largest drops in share of the youngest age groups are experienced precisely mainly in those countries, from which the emigration is particularly high: Bulgaria, Latvia, Lithuania, Romania, Poland and Slovakia. For example in case of Latvia (where the drop of the share of the youngest age group is the highest being 3,17 percentage points), between the two last censuses (2000 and 2011) the country's population decreased by 13%, and out of this, 63% "was due to negative net migration over the last decade" (Eurofound, 2014, p. 26). Similarly, outflow from Lithuania was also high, experiencing negative net migration of more than 38 thousand and 21 thousand in 2011 and 2012, respectively (Statistics Lithuania, quoted in Eurofound, 2014.) – in country with a population of about 3 million people, this can be regarded as a considerable loss. Although in Bulgaria, a much lower share of the loss of its population was attributed to emigration than in Latvia, the loss itself between the two censuses (i.e. during the first decade of 2000s) was very large, being 564 thousand – out of this about one third is estimated to be due to emigration, whereas the rest, two thirds is attributed to natural decrease (ibid, p. 27). The latter is, however, obviously related to previous large emigration waves which accelerated aging of the population in the country. Undoubtedly, however, the two largest sending countries are Romania and Poland. According to the latest estimates, about 2,1 million Romanians work in other EU countries in 2013, whereas the number of Polish citizens staying abroad was about 2,06 million in 2011 (ibid, source for Polish data: OECD 2013).

Some key characteristics of the EU10 mobile citizens

Various findings from research on the main characteristics of EU10 mobile citizens in the destination countries confirm what table 3 suggests from the sending countries' perspectives, namely that those EU mobile citizens tend to be young and there is evidence for the strong presence (dominance) of the prime working age population. This is a common feature characterising the EU10 mobile citizens across all destination countries compared not only with natives, but also other migrant groups. In the UK for example, a research project, covering new arrivals during quite a long period (2000-2012), concluded that the average age of the EU10 mobile citizens stood at 30.4 years, whereas for the natives, this was much higher, being 40.8 and in case of the other EEA (European Economic Area¹⁶⁴) countries the difference was not as high but their average age was still higher: 31 years. As regards the non-EEA arrivals, their average age stood at 32,2 years (Frattini, 2014). Supposedly, even this finding underestimates the average age of more recent arrivals from EU10 (i.e. after the accession, 2004 and 2007), as evidenced by other research covering the period since the accession only and/or showing more recent data. They pointed to average even below 30 years.¹⁶⁵

Research covering the period of the first decade of the new Millennium revealed that the EU10 mobile citizens were well-educated and had no family (as yet). It was found that in fact, education level of the EU10 mobile

¹⁶⁴ They include the EU28 plus Iceland, Lichtenstein and Norway.

¹⁶⁵ Even the same research showed that, when later arrivals (2008-09) were examined, their average age stood at lower level, being 29,5. Although due to data problems, different immigrant groups could not be distinguished among them, it can be assumed that since EU10 migrants dominated the group of immigrants arriving to the UK at that time, this figure reflects their younger age. In addition, preliminary finding of a more recent research covering the latest data (also from 2013) also found an average of the EU10 citizens below 30 years (Eurofound, 2015, forthcoming).

citizens is higher than that of the host population in EU15: the share of EU10 migrants with high educational attainment stood at 26.9% in 2009 (whereas the respective share within the total EU10 population was 15.5% only, and the corresponding figure for the total EU15 population was also lower, 21.7% - Kahanec, 2012, p. 29). Despite this, however, the EU12 migrants work in less-skilled occupations than natives. (2010 Labour Force Survey-data, Kahanec, *ibid*, p. 22.)

Preliminary findings of a more recent research (Eurofound 2015, forthcoming) revealed that EU10 mobile citizens increasingly had families, though this change is very gradual. This is the case for example, in one of the host countries, in Denmark. Similarly, research in the UK found that among the various welfare benefits, EU10 citizens are mostly recipients of family related and child benefits. At the same time, in many destination countries related to younger age of EU10 mobile citizens, their share of unmarried persons is still higher than that of natives, although this is not everywhere the case.

When gender composition is examined, various research findings showed a balanced gender pattern, although the most recent research by Eurofound pointed out in case of some nationalities and in some host countries, women's share is higher (e.g. in Austria, that of Bulgarian and Romanian women), and they tend not to have families as yet.

Although more recent research confirmed previous findings of higher educational attainment of EU10 mobile citizens than natives, it also showed that for example in the UK, their qualification level is lower than that of the other immigrant groups: share of highly educated EU10 citizens was 37% (*vis-à-vis* 16% for natives), but this proportion stood at 49% for other EEA citizens and in the case of the non-EEA citizens it was higher, being 42% (Frattini 2014). Recent research by Eurofound (2015 – forthcoming) shows that educational attainment of the EU10 citizens seems to vary both by the destination countries and countries of origin.

As regards the occupational pattern, a more straightforward picture is shown: most EU10 citizens are occupied in low-skilled jobs: they “were far more likely to perform unskilled work {than other immigrant groups and natives – KF}; a full half of the 2009 cohort who were employed a year after arrival were in the lowest-skilled jobs...” (Bevelander et al. 2014). The study continued to conclude that EU10-origin “workers who entered after EU enlargement were more likely to be employed in elementary occupations than their compatriots who emigrated earlier, because these later cohorts were not subject to selection criteria.¹⁶⁶ *But over time, immigrants did appear able to move out of the lowest-skilled work. Those who arrived in 2001 saw their employment in the lowest-skilled jobs fall by almost 10% after a decade, although the share remained around 5 percent higher than natives. Post-enlargement cohorts also saw improvement over time, although from a much higher base.*” (Emphases – italics – are mines, KF – Bevelander et al., 2014)

In some countries agriculture as a recipient sector seems important, in others it is rather construction and services (such as tourism, catering, domestic help and cleaning) which are dominant. (Eurofound, 2014)

¹⁶⁶ This is certainly true from the demand side. But as regards labour supply (i.e. from the perspective of the EU10 citizens), as mentioned, one of their motivations for emigration to achieve higher income, which could be (even much) higher than if they were employed in a higher-skilled job in their home country. Many of them want to accumulate sufficient financial resources to start a business or buy/build/refurbish a property in their home countries when they return, or they hope to be able to get a better job over time in the host country, if they want to stay.

Current trends in labour market performance of recent EU immigrants

It is well known that main motivation of EU10 mobile citizens behind their emigration is to achieve higher income level, therefore their main objective is to work in the destination country selected (apart from their age pattern mentioned above, this is reflected by their high participation rate in all destination countries, confirmed by evidence). After the crisis, however, due to their vulnerable labour market position (low-skilled jobs, high concentration in sectors which were particularly hard hit by the economic downturn, such as construction and manufacturing), many of them lost their jobs and it was either difficult to find a new permanent one, or others had to take up more than one part-time jobs in order to make ends meet. Within this context, trends in their employment rates vis-à-vis the natives are worthwhile to examine.

As can be seen from Table 3, at EU level (EU27/28), the average employment rate of the EU12 mobile citizens¹⁶⁷ was always the highest compared to the total and that of the natives. The effect of the crisis is very clear: employment rates of all the three groups (total, natives, and EU12 mobile citizens) started to fall in 2009. Whereas the decline, however, seems to have stopped in 2011 for the former two groups, this did not happen for the EU12 mobile workers. Moreover, as a consequence of the crisis, the employment rate of the EU12 mobile citizens decreased more dramatically than that of the other two groups, so the gap between that of the first group on the one hand and employment rates of the latter two groups narrowed down: whereas the employment rate of the EU12 mobile citizens was close to 7 percentage points higher than that of the total or the natives in 2007, the difference halved, having dropped to a bit more than 3 percentage points.

If the individual countries are considered, it is remarkable that despite the (seemingly still) favourable (although deteriorating) situation at EU level, the data reflect vulnerable labour market position of the EU12 mobile citizens in many of the individual destination countries. Even during the pre-crisis period (i.e. in 2007), in 6 out of the 10 key host countries examined (Austria, Belgium, Denmark, Germany, Sweden and the Netherlands), employment rate of the EU12 mobile citizens was lower than that of the natives. Although, not surprisingly, this situation has not changed since then in most destination countries, Belgium is the only exception where this turned reversed. However, in Spain, which is among the countries suffered most from the crisis and its labour market deteriorated to a considerable extent, employment rate of EU12 mobile citizens worsened even more, by their rate having dropped to a level below that of the natives by 2010 and a further deterioration occurred in 2011. It is interesting to see, however, that in Italy, where employment rate of natives is the lowest among all the countries examined in Table 3, this has not happened. Previous research results confirmed that in Italy the EU10 citizens did not suffer from such a huge job loss than in Spain, where the flourishing construction industry (due to previous property market bubble) all of a sudden collapsed. – This did not happen in Italy (or at least not to such an extent), instead, there was a higher demand there for those skills the new EU migrants could offer). Even if in some crisis-stricken countries (besides Italy also in Ireland) the employment rate of the EU10 mobile citizens remained higher, the difference diminished: this is most notable in the case of Ireland, where it declined from more than 15 percentage points to less than 7 percentage points.

Trends in employment rates obviously reflect the labour market and economic situation within a certain country. For example in Germany, which was not affected by the crisis seriously, the employment rate of the EU10 mobile workers increased and the difference diminished to some extent.

¹⁶⁷ Eurostat data contain not only the EU10 citizens but include those from Malta and Cyprus respectively, the two countries which joined the EU at the same time when EU8 did, i.e. in 2004.

Table 2: Total employment rates, those of natives (N) and EU12 mobile citizens in the EU and selected key destination countries (%)

	2007			2008			2009			2010			2011		
	Total	N	EU12	Total	N	EU12	Total	N	EU12	Total	N	EU12	Total	N	EU12
EU28	65.3	65.5	72.1	65.7	65.9	71.1	64.5	64.8	68.5	64.0	64.4	68.1	64.1	64.5	67.6
EU27	65.3	65.5	72.1	65.8	66.0	71.1	64.5	64.9	68.5	64.1	64.5	68.1	64.2	64.6	67.6
EU15	66.8	67.3	72.0	67.1	67.5	71.0	65.8	66.3	68.3	65.4	66.0	67.9	65.5	66.1	67.5
BE	62.0	62.9	61.9	62.4	63.1	60.9	61.6	62.5	63.1	62.0	62.8	66.2	61.9	63.0	66.1
DK	77.0	78.1	72.2	77.9	78.7	77.5	75.3	76.0	78.8	73.3	74.1	71.3	73.1	74.1	66.9
DE	69.0	70.5	61.8	70.1	71.7	64.0	70.3	71.9	65.9	71.1	72.7	65.1	72.5	74.0	68.4
IE	69.2	68.3	83.9	67.6	66.9	79.3	61.9	61.7	67.4	59.6	59.6	63.8	58.9	58.7	65.0
ES	65.6	65.1	72.7	64.3	64.2	68.1	59.8	60.3	61.3	58.6	59.0	58.8	57.7	58.4	54.8
IT	58.7	58.1	71.7	58.7	58.1	70.1	57.5	56.9	69.5	56.9	56.3	69.2	56.9	56.4	66.9
NL	76.0	76.7	67.3	77.2	77.8	76.2	77.0	77.6	66.1	74.7	75.3	68.0	74.9	75.6	72.0
AT	71.4	72.4	70.0	72.1	73.2	67.4	71.6	72.8	63.5	71.7	72.8	64.9	72.1	73.2	66.9
SE	74.2	75.0	60.8	74.3	75.1	68.4	72.2	73.0	67.3	72.1	73.1	65.2	73.6	74.8	65.0
UK	71.5	71.9	80.9	71.5	71.8	81.7	69.9	70.2	81.0	69.5	69.8	80.6	69.5	69.7	80.3

Source: Own calculations, based on Eurostat data.

Of course, the average employment rate masks the differences of that of various nationalities. In Sweden labour market outcomes of earlier arrivals (in 1993-97) were examined. It was found that by 2011, employment rate of Polish citizens has reached almost the same level, as that of citizens from the other Scandinavian countries (Denmark, Finland and Norway). It's interesting to see that even the trend was similar, especially between 2002 and 2011 (in 1997 the Poles' employment rate was much lower, being just above 20%, although even then this was higher than those of other immigrants (e.g. Bosnia, rest of former Yugoslavia, Turkey, Iraq and Iran, but whereas immigrants from the former two managed to exceed the native employment rate of 81% by 2011, other citizens from third countries could not catch up - Bevelander et al., 2014, p. 12)

Conclusions: possible future perspectives

Considering the current situation, it is difficult to give a clear answer to the question formulated in the title. The reason is that ongoing developments do not reflect in a straightforward way whether there is a brain drain, brain gain or brain waste. According to the available data, the majority of East-European mobile citizens are overqualified for the job they have in the host countries. Therefore at present signs of brain waste seem to prevail. A well-known Polish migration expert, Pawel Kaczmarczyk, asks whether brain waste is something which cannot be avoided.¹⁶⁸ From his research, he concluded that return to human capital is generally low for EU8 citizens, especially for Poles, where it is very low (his research pointed out a wage penalty in their case). As assumed reasons, he identified the shortcomings of skill transferability, lack of language knowledge and possible cohort effects Kaczmarczyk (2014). He quotes some researchers (Mattoo et al.), who conclude that there is a "common brain waste", which is likely to persist because as a consequence of the aforementioned low return,

¹⁶⁸ This was asked also in his presentation, entitled 'Well-educated migrants on the European labour market: between brain gain and brain waste', which was held in Brussels, September 2014.

there are “low incentives to invest in human capital”. The fact that “many migrants do not get a good return on their education in the local labor market” is confirmed also by Benton et al., 2014.

Previous research on long-term labour market perspectives of immigrants has, however, provided evidence of many foreign workers being able to “climb up the occupational ladder” over time (see for example: Bevelander et al, 2014). There are even some signs of this happening also in the case of the EU10 mobile citizens. According to these experiences, migrants could have strong incentive to invest in host country-specific human capital, such as learning the language and attending such training courses which enable them to get the jobs they aspire for.

As regards brain drain, its definition, as provided by Kaczmarczyk (2014), is a “selective outflow of highly skilled persons”. Within the context of post-enlargement migration of the EU10 citizens, he and Okolski (Kaczmarczyk and Okolski, 2008) introduced the term “brain overflow” – (as an alternative to brain drain). Indeed, if the gap between educational attainment of EU10 citizens and their labour market outcomes (in terms of not only their employment level but their occupation as well) is considered, this seems to be a more appropriate term for describing the current situation than that of the brain drain. The phenomenon of “brain overflow”, however, could provide a good base for their better labour market performance.

The aforementioned Polish experts seem quite pessimistic when they attempt to draw a balance between the costs and benefits of mobility. They say¹⁶⁹ that “while countries of destination, on average, benefit from immigration, countries of origin tend to bear relatively high costs of the outflow”. Indeed, it seems that the intra-EU mobility has substantial social consequences on the sending countries, which are apparent not only in changes of demographic pattern in these countries (e.g. age composition of the population), but also in lives of individual families. This could have far-reaching consequences also for some social services in the future in these countries as well.¹⁷⁰ For example, impacts on family members left behind, or the effects of outflow on regions/small areas/villages, impacts are already significant. This situation may result in an expansion of long-term care services in the future, not only due to demographic changes but also due to more (payable) demand for these from the part of EU mobile citizens (in the form of remittances to their family members left behind).

Even nowadays, however, an increased circularity (circular movement) can be observed in intra-EU mobility. This is likely to persist and expand in the future. If, as part of circularity, return migration will occur on a larger scale than today, the issue of brain drain and brain gain may not be as high on the agenda as today.

¹⁶⁹ See Kaczmarczyk's presentation, mentioned before

¹⁷⁰ Let alone those long-term psycho-social consequences the children who are left behind, would suffer from the absence of their parents. This should be considered when possible perspectives are assessed, even if there is no hard evidence on this as yet, and detailed analysis of the topic is beyond the scope of this study.

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Appendix

Table A1: Total fertility rates in EU27/28, EU10 plus Croatia and in some key destination countries

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
European Union (28 countries)	1.47	1.50	1.51	1.54	1.56*	1.61	1.60	1.61	1.58*	1.58*
European Union (27 countries)	1.47	1.50	1.51	1.54	1.56*	1.61	1.60	1.61	1.58*	1.58*
Belgium	1.67	1.72	1.76	1.80	1.82	1.85	1.84	1.86	1.81*	1.79
Bulgaria	1.23	1.29	1.32	1.38	1.49*	1.56	1.66	1.57	1.51	1.50
Czech Republic	1.18	1.23	1.29	1.34	1.45	1.51	1.51	1.51	1.43	1.45
Denmark	1.76	1.78	1.80	1.85	1.84	1.89	1.84	1.87	1.75	1.73
Germany	1.34	1.36	1.34	1.33	1.37	1.38	1.36	1.39	1.36	1.38
Estonia	1.37	1.47	1.52	1.58	1.69	1.72	1.70	1.72	1.61	1.56
Ireland	1.96	1.93	1.86	1.91	2.01	2.06	2.06	2.05	2.03	2.01
Spain	1.30	1.31	1.33	1.36	1.38	1.45	1.38	1.37	1.34	1.32
France	1.89	1.92	1.94	2.00	1.98	2.01	2.00	2.03	2.01	2.01
Croatia	1.41	1.43	1.50	1.47	1.48	1.55	1.58	1.55	1.48	1.51
Italy	1.29	1.34	1.34	1.37	1.40	1.45	1.45	1.46	1.44	1.43
Latvia	1.32	1.29	1.39	1.46	1.54	1.58	1.46	1.36	1.33	1.44
Lithuania	1.26	1.27	1.29	1.33	1.36	1.45	1.50	1.50	1.55	1.60
Hungary	1.27	1.28	1.31	1.34	1.32	1.35	1.32	1.25	1.26	1.34
Netherlands	1.75	1.72	1.71	1.72	1.72	1.77	1.79	1.79	1.76	1.72
Austria	1.38	1.42	1.41	1.41	1.38	1.42	1.39	1.44	1.43	1.44
Poland	1.22	1.23	1.24	1.27	1.31	1.39	1.40	1.38	1.30*	1.30
Romania	1.31	1.35	1.39	1.40	1.42	1.53	1.57	1.54	1.46	1.53
Slovenia	1.20	1.25	1.26	1.31	1.38	1.53	1.53	1.57	1.56	1.58
Slovakia	1.20	1.25	1.27	1.25	1.27	1.34	1.44	1.43	1.45	1.34
Sweden	1.71	1.75	1.77	1.85	1.88	1.91	1.94	1.98	1.90	1.91
United Kingdom	1.70	1.75	1.76	1.82	1.86	1.91	1.89	1.92	1.91	1.92

Note: *Break in series

Source: Eurostat

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