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AGRICULTURE IN AN INTERCONNECTED WORLD

10 Years of EU Membership: The case of the NMS agri-food sector

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10 years have passed since the 2004 accession round to the European Union. The tenth anniversary provides a good opportunity for stocktaking and assessing the developments of the New Member States in light of the latest data available. The aim of this paper is identify the winners and losers of accession in the agri-food sector of the New Member States by ranking individual country performances. Results suggest Poland, Estonia and Lithuania to be winners of EU accession regarding agricultural, agri-environmental and rural performance, while Slovakia, Latvia and Hungary appear to be the losers in this regard.

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1. Introduction

10 New Member States (NMS) joined the European Union in 2004. The tenth anniversary provides a good opportunity for stock taking and analysing the winners of accession in the agri-food sector during the previous decade. Despite the apparent importance of the topic, there is a limited number of research dealing with impacts of EU accession on NMS agri-food sector. The aim of this paper is identify the winners of accession in the agri-food sector of the New Member States. Which countries used the possibilities provided by the common market to the most? Which countries lacked behind in the agri-food sector? These are the questions the article aims to answer.

In order to achieve its aim, the paper is structured as follows. Section 2 presents a brief literature review on the topic, while Section 3 summarizes the method used for conducting the analyses. Section 4 analyses changes in agri-food (agriculture, agri-environment and rural) performance and identify the winners of accession, while Section 5 seeks to identify the reasons behind different performances. Section 6 concludes.

2. Literature review

Research on the lessons of EU accession on New Member States' agriculture is a relatively new but expanding field in the literature. Many books around the millennium have quantitatively estimated the impact of EU enlargement in agriculture on EU expenditures, on agricultural protection levels, on commodity markets and trade (see e.g. Tangermann and Banse 2000, Hartell and Swinnen 2000).

Hertel et al. (1997) were among the first to conduct a sectoral and economy-wide analysis of integrating NMS into the EU by using the GTAP model and found that accession would result in very substantial increases of both crop and livestock production in the NMS, while net budgetary consequences of integration for agricultural expenditure would be quite modest. Bchir et al. (2003) investigated the impact of EU enlargement on Member States with a CGE approach and analysed three scenarios. On the whole, they provisioned that EU accession would provoke huge swings on relative prices and big fluctuation in the real exchange rate, raising serious concerns

for agriculture. They also forecasted that the impact of accession on EU15 members would be negligible, whereas NMS would face huge, and not always beneficial consequences.

A few years after accession, Gorton et al. (2006) analysed the international competitiveness of Hungarian agriculture by calculating domestic resource cost (DRC) ratios and making estimations for 2007 and 2013. They projected that EU enlargement will have a negative impact on the international competitiveness of Hungarian agriculture by increasing land and labour prices. Similar estimations were conducted by Erjavec (2006), forecasting that the newly accessed countries will gain from higher prices and budgetary support, indicating real improvements in most agricultural sectors on recent production levels. Ivanova et al. (2007) analysed Bulgarian agriculture following EU accession by the AGMEMOD model and found that accession would have a very positive effect on the crop sector in Bulgaria, whereas the effect is the opposite on the livestock sector.

A large amount of literature is also dedicated to the analysis of trade impacts after 2004. Bojnec and Fertő (2008) analysed the agri-food trade competitiveness with the EU-15 of the newly accessed Member States and concluded that trade has increased as a result of enlargement, though there have been 'catching-up' difficulties for some countries in terms of price and quality competition, more so in higher value-added processed products. Artan and Lubos (2011) analysed the agrarian trade transformation in the Visegrad Countries and found that the value and volume of export and import operations increased significantly. Ambroziak (2012) investigated the relationship between FDI and intra-industry trade (IIT) in the Visegrad countries and found that FDI stimulated not only vertical IIT in the region but also horizontal IIT. He found that differences in country size and income were positively related to IIT as is FDI, while distance and IIT showed a negative relationship.

Policy-oriented analysis of the lessons of accession can be found in Möllers et al. (2011) who investigated the changes in agricultural structures and rural livelihoods in the NMS and reached several agricultural policy conclusions, especially regarding the ongoing debate of the Common Agricultural Policy. Gorton et al. (2009) analysed why the CAP does not fully fit the region and identified several reasons valid for the NMS. Csáki and Jámbor (2013) analysed the impacts of EU accession on NMS agriculture and concluded that EU accession has had an overall positive impact, although member states capitalised their possibilities in a different manner. Kiss (2011)

echoed the above conclusion and added that accession has created an incentive to NMS agriculture but also had negative effects due to tough competition in the enlarged market.

3. Methodology

In line with the aim of the chapter, an innovative tool (the agri-food performance index) is used to analyse the post-accession agri-food performance of the NMS. The agri-food performance index is similar to those generally applied by international organisations to measure and compare economic performance of a group of countries (e.g. Global Competitiveness Index, Environmental Performance Index, etc.). Just like in the associated reports, past performance is ranked through different indicators and then aggregated into one. A similar approach is applied here: 15 indicators, 5 of each related to agricultural, agri-environmental and rural performance is captured and then aggregated to the agri-food performance index. Except for Csaki (2004) using a similar logic to assess the status of transition, this approach has not been used to the agri-food sector so far.

The chapter analyses agri-food performance of NMS in 2001-2012. This period is subdivided into four equal periods (2001-2003, 2004-2006, 2007-2009, 2010-2012) to better assess the impacts of EU accession. An average for all sub-periods is calculated for each of the 15 indicators and then averages of the first and last periods are compared. In order to manage negative results (i.e. negative changes in specific indicators in time), the value of the smallest average, pertaining to a country, is added to all countries' respective changes (changes from 2001-2003 to 2010-2012) and then final scores by country are given in percentage of the highest value. This method enables us to give 100% to the best performing country (i.e. the country with the highest positive change for an indicator) and continuously less to those performing worse.

For the five indicators pertaining to one category (agriculture, agri-environment, rural), all this ends up in averages for a category and then for the whole sample (the agri-food performance index is an average of the average indices of the three main categories). The list of the 15 indicators selected is given in Appendix 1. Indicators were selected on two basis: (1) empirical literature applications and (2) data availability for all the countries and periods analysed. If an indicator is unavailable for a country, the indicator will be omitted from counting the averages.

This method enables us to identify the winners and losers of EU accession in the agri-food sector as countries possessing the highest values for the agri-food performance index are treated as the winners (i.e. the best performing countries), while those with the lowest values, the losers (i.e. the worst performing countries) of accession. As countries are ranked on the basis of their own performance, initial differences among countries do not play a role.

As a major source, the paper uses the Eurostat database but FAO and World Bank datasets are also used in some cases. Note that the article focuses on the 2004 accession round and therefore, Bulgaria, Croatia and Romania are excluded from the analyses despite that they are also new EU members. Cyprus and Malta are also excluded because of the marginal importance of their agri-food sector compared to other NMS.

4. Agricultural performance

The first indicator describing the performance of agriculture is the gross production value per hectare. There are very significant differences regarding this productivity index among NMS. On the one hand, Slovenia had a gross agricultural output of 2181 euro/ha in 2012, while the same hectare of agricultural land produced 298 euro in Latvia at the same time. The biggest increase in this regards can be seen in Poland (a 56% increase from 2001-2003 to 2010-2012), while Slovakia even decreased her agricultural output per hectare by 7% in the same period.

FIGURE 1 GOES HERE

As Figure 1 indicates, Poland became the first in agricultural output performance (got 100 score), followed by Lithuania (score 74) and Latvia (score 28). Note that difference between the first and third rank is almost threefold (Table 1).

TABLE 1 GOES HERE

Another traditional way of analysing agricultural productivity is related to cereal yields. Evidence shows that Slovenia had the highest yields of cereals in the NMS in all years after

accession, almost equal to EU15 levels (both were 5.8 tonnes/ha in 2012,). The Czech Republic was the second, while Hungary was the third in this regard – the lowest productivity pertained to Estonia (Figure 2). Cereal yields were increasing in the vast majority of cases after accession, though still remained low compared to EU15 levels. The biggest increase can be observed in Estonia from 2001-2003 to 2010-2012 (40%), while the smallest increase was in Hungary at the same time (14%). Therefore, Estonia got a 100 score here and Hungary 0, as evident from Table 1.

FIGURE 2 GOES HERE

Milk yields are also worth to be analysed so as to counterweight the role given to the cereals sector. Czech cows gave the most milk in the region per year in 2010-2012 (almost 7300 kilograms/year), while Slovakian ones were the least productive at the same time with 2800 kilograms/year. However, Estonia experienced a 44% increase in milk yields after accession, while these yields were even decreased in Hungary and Slovakia by 3% at the same time. Regarding our performance indicators, Estonia got 100 and Slovakia 0 (Table 1).

The fourth agriculture-related indicator is farm income. Although farm income increased in each and every country in the region, Estonian farmers seemed to experience the highest increase (four times from 2001 to 2012), while Slovenian the lowest (50% in the same period) – see associated scores in Table 1 again.

One of the most significant effects of EU accession can be observed in the agricultural trade performance of the NMS (Figure 3). It is quite evident that agri-food trade balance shows a diverse picture in the region. On the one hand, Hungary and Poland could reach the biggest agri-food trade surplus of 4 billion USD in 2010-2012, while Lithuania also had a surplus almost of a billion USD. On the other hand, all the other countries experienced an agri-food trade deficit (which was even increasing in the Czech Republic and Slovenia from 2001-2003 to 2010-2012). The sharpest increase in agri-food trade balance was reached by Poland, followed by Lithuania and Hungary (Table 1).

FIGURE 3 GOES HERE

Regarding the overall performance in agriculture, the Baltic countries and Poland are standing on the imaginary award podiums, outperforming all the others. From this perspective, Hungary and Slovakia got the last positions, slightly behind Slovenia (Table 1).

5. Agri-environmental performance

The first indicator selected for measuring the agri-environmental performance of a country is GHG emissions in agriculture. Although not changing to a great extent, GHG emissions from agriculture decreased from 2001-2003 to 2010-2012 in Slovakia, Hungary, Slovenia and the Czech Republic, while increased in all other countries analysed. Note, however, that the average GHG emission for Poland was 37 million tonnes of CO2 equivalents in 2010-2012, while it was only 1 million for Estonia. As Slovakia made the biggest decrease, she got 100 points, compared to Latvia, increasing GHG emissions by 12% in a decade – 0 points (Table 2).

TABLE 2 GOES HERE

The share of organic crop area is another widely used indicator measuring changes in agri-environmental conditions. In 2010-2012, Estonia had the highest share of her utilised agricultural area dedicated to organic production (14%), while Hungary had the lowest (2.5%). Regarding the changes, it seems that Lithuania leads the line with a ten times increase of organic areas after EU accession, while this share was only 28% in Hungary at the same time. Therefore, Lithuania got 100 points while Hungary 0 (Table 2).

FIGURE 4 GOES HERE

The third and fourth indicators related to agri-environment both measure fertilisers use. On the one hand, Latvia almost doubled her phosphorus use from 2001-2003 to 2010-2012. On the other

hand, the Czech Republic cut her use of phosphorus by 23% at the same time. Similar patterns can be seen in nitrogen use, where Slovenia decreased, while Latvia increased her respective use of nitrogen in agricultural areas the most – respective point for their performance are indicated in Table 2.

The final indicator selected in this section is the change in the territory of permanent meadows and pastures (Figure 5). The biggest areas under meadows and pastures could be found in Poland in the region (3.2 million ha in 2010-2012), while the smallest in Slovenia (less than 0.3 million ha in the same period). Regarding changes, Lithuania, Slovakia, Hungary and Slovenia decreased the territory of meadows and pastures, while all other countries experienced an increase in this regard. Estonia leads the line with her 71% increase from 2001-2003 to 2010-2012.

FIGURE 5 GOES HERE

The overall agri-environmental performance of the NMS show a very different picture compared to agricultural performance. In agri-environment, it was Slovenia, the Czech Republic and Slovakiawho used the possibilities offered by the European Union to the most. Interestingly, the Baltic countries are in worse positions here.

6. Rural performance

The first indicator measuring rural performance of NMS after accession is the number of rural population by country. As Poland has the largest and Estonia the smallest total population in the region, these countries represent the two extremes in the number of people living in rural areas. However, the Czech Republic, Slovenia, Slovakia and Poland could increase their rural population from 2001-2003 to 2010-2012, while all other countries concerned experienced a decrease in rural population (the biggest decline occurred in Hungary with -14%). Therefore, the Czech Republic performed the best in this regard (100 points), while Hungary the worst (0 points) – see Table 3.

TABLE 3 GOES HERE

Rural employment is another well-known indicator measuring rural performance. Contrary to changes in rural population, rural employment was decreasing in Lithuania, Latvia, Hungary, the Czech Republic and Slovenia from 2001-2003 to 2010-2012, while increasing in all other countries (Figure 6). Note that rural employment decreased in the Czech Republic and Slovenia in spite of the fact that more people was living in rural areas after accession, while exactly the opposite was true for Estonia.

FIGURE 6 GOES HERE

The third indicator in the rural section is the rural-urban GDP gap, indicating differences in urban-rural GDP at market prices. The gap was the highest in Slovenia in 2007-2009 where an urban resident earned almost 18,000 euro more than a rural one. At the other end, this difference was approximately 6500 euro in Poland. However, it was Slovenia and Latvia where the rural-urban GDP gap widened the most after accession (by 153% and 114%, respectively), while Slovakia experienced the gap to be widened to the least extent (58%) from 2001-2003 to 2007-2009.

The density of motorways (length/km2) in a country is applied as a proxy for the development of rural areas. If physical infrastructure remains underdeveloped, it is assumed that rural regions will grow to a less extent. Slovakia had the highest density of motorways in the sample (38 km/1000 km2), while Estonia had the lowest (2.5 km/1000 km2). However, Poland could increase her density of motorways by 140% from 2001-2003 to 2010-2012 (got 100 in Table 3), while Estonian motorways just grew by 19% at the same time (received 0 in Table 3).

The last indicator in the rural section is the share of early school leavers. Just like the previous indicator, this is used as a proxy for the development of rural areas. A smaller share is assumed to give higher rural development possibilities. The share of early school leavers decreased in each and every NMS from 2001-2003 to 2010-2012, though to a different extent (Figure 7). The

highest decrease can be observed in Lithuania (45%), while the lowest in Hungary (11%) – see associated scores in Table 3.

FIGURE 7 GOES HERE

Summing up rural performances, Poland, Slovakia and the Czech Republic were leading the line in using the possibilities Europe offers in rural areas the most, while Lithuania, Latvia and Hungary showed the least changes in rural areas in ten years.

By making the average of the 15 indices analysed above, the agri-food performance index is calculated. There exists a huge competition among NMS regarding their final ranks (Table 4). Poland became the first, preceding Estonia and Lithuania. Slovenia reached the fourth position, slightly before the Czech Republic and Slovakia - though their agri-food performance index is more than 15% less than that of Poland. Latvia became the seventh, while Hungary's agri-food performance was the worst in our sample. On the whole, based on our methodology, Poland is the winner of EU-accession, using the possibilities of EU accession to the most in the agri-food sector, while Hungary was outperformed by all the NMS in ten years.

TABLE 4 GOES HERE

We are aware that our approach has many limitations. First, it is evident that the selection of indices can alter the final performance of the countries. Second, ranks can also change by the selection of new periods to compare. Third, we are not aware whether these changes would anyway have happened or they are an effect of EU accession. Fourth, there might be some correlations between the selected indicators which can over represent the anyway leading performances. However, we believe that our selection of 15 different indices show trends standing close to reality.

7. Possible reasons behind

There can be many reasons behind the different performances of the NMS. First of all, these countries have different initial conditions. Different distribution of agricultural land quality and quantity together with the differences in agricultural labour and capital endowment definitely had an impact. As evident from Table 5, Poland had the biggest agricultural land, labour and capital endowment in the NMS. However, only Estonia and Latvia could increase their agricultural land area from 2001-2003 to 2010-2012, while agricultural labour decreased in each and every NMS. On the other end, agricultural capital increased in all countries but Poland and Slovakia. It is well observable from Table 5 that with some exemptions, those countries where changes in factors of production were better than the regional average generally performed better.

TABLE 5 GOES HERE

Besides initial conditions, another factor behind different country performances lies in farm structures (Figure 8). On the one hand, the majority of land was cultivated by small farms just in Latvia, Lithuania, Poland and Slovenia. In Poland and Slovenia, small scale farms dominated agriculture during the socialist period and they have not been changed much after 1990 (Csáki and Jámbor, 2009). On the other hand, large farms ruled land use in the other four countries. Values of Czech Republic and Slovakia (around 90% for large farms) show an extreme dominance of large scale farming. However, medium-scale farming is missing in the majority of the cases. These patterns stayed relatively stable if comparing these results to pre-accession levels. As to the impact of farm structures on post-accession performances, it is evident that in Poland and Slovenia, small scale agriculture proved to be beneficial, while the dominance of large scale farming seemed to have detrimental impacts on country performances except for Estonia.

FIGURE 8 GOES HERE

Differently implemented land and farm consolidation policies have also had diverse effects on post-accession country performance. Restrictive pre-accession land policies and the lack of land and farm consolidation (e.g. in Hungary) has negatively influenced the capacity to take advantage of the enlarged markets by constraining significantly the flow of outside capital to the agricultural sector (Ciaian et al. 2010). Conversely, liberal land policies (e.g. in Baltic countries) helped the agricultural sector to obtain more resources and utilise better the possibilities created by the accession. In other words, those countries with restrictive land policies performed worse as also suggested by Swinnen and Vranken (2010).

The magnitude of privatisation in the agri-food sector and the type of foreign ownership also affected post-accession performances. After the collapse of the Soviet markets, there was a massive privatisation of the agri-food sector in the majority of NMS. Those countries giving ownership of food processing companies to local farmers (e.g. Czech Republic, Poland) performed better, while the rapid rise of foreign ownership together with fast privatisation resulted in worse performances in the long run (e.g. Hungary). Moreover, it was only Poland and Slovenia who could increase their agricultural capital stock in the NMS after accession, although the majority of the region started to reinvest in agriculture, evident from FDI inflows to the sector (Meyers et al, 2012). Countries with higher investments and capital definitely performed better.

The ways in which the countries used EU-funded pre-accession programmes such as SAPARD, ISPA and PHARE was also important. Those who focused on competitiveness enhancement and production improvement were better placed to realise the benefits post- accession. On the contrary, delays in creating the required institutions as well as the initial disturbances of implementation resulted in the loss of some EU funds in a number of countries (Csáki-Jámbor, 2013).

The diversity of the macro environment also had an impact (Figure 9). Annual average GDP growth in the NMS was the highest in Slovakia and Poland, while the lowest in Hungary in the period analysed (Eurostat, 2014). The annual average GDP growth of the region (3.3%) was

outperformed by all countries but the Czech Republic, Hungary and Slovenia. Note that it was only Poland whose annual GDP growth remained positive in all years analysed.

FIGURE 9 GOES HERE

We believe that the volatility and transparency of agricultural policies was one of the most important reasons behind different performances. Changing agricultural policies, usually taking a u-turn after elections, was very much against the long-term growth of the agri-food sector. Those countries with reliable and transparent policies (e.g. Poland) could reach better results than those with fire-brigade agri-food policy making during the past decade (e.g. Hungary). The consistency of agri-food policy making is also reflected in the existence of long-term agriculture and rural development strategies which the majority of the region was in lack of.

The focus of total payments on agriculture also determined agri-food performances. Before accession, payments in favour of competitiveness enhancement have definitely proven to be beneficial. On the one hand, those countries where agricultural subsidies to farmers remained at a low level (e.g. Poland) have gained with the accession which has provided visible incentives for production and led to the increase of agri-food trade balance. On the other hand, those countries providing initially high and uneven price and market support (e.g. Hungary) are considered to lose with accession as it has brought hardly any price increase. Agricultural policy not in favour of measures aiming to enhance competitiveness was a failure, resulting in a situation where the majority of farmers were not prepared for the accession (Csáki-Jámbor, 2013).

However, a different picture regarding the focus of total payments on agriculture appears after accession. Interestingly, those countries spending less than the regional average on modernisation of agricultural holdings generally performed better (Figure 10). On the one hand, Poland and Slovenia spent less than a third of their axis 1 funds to modernisation while the regional average was 52%. On the other hand, Hungary, Latvia and Slovakia spent the vast majority of their first axis funds on modernisation which, from 10 years hindsight, seems to have been a mistake. The reason behind lies in the low effectiveness of these payments –

modernisation of farms did not necessarily mean modernisation of farms with competitive potentials.

FIGURE 10 GOES HERE

At the other side of the coin, countries investing in enhancing generation change in agriculture (by spending on young farmers and early retirement) generally performed better. Poland actually spent 43% while Lithuania 24% of their respective axis 1 payments to fostering generational change which proved to have been beneficial. However, respective numbers for Hungary and Latvia were 8% and 7%, indicating low interests in changing the disadvantegous age structure in agriculture.

8. Conclusions

The article analysed the post-accession agri-food performance of NMS on the occasion of the tenth anniversary of EU accession. By selecting 15 indices in three areas (agriculture, agri-environment and rural) aiming to analyse post-accession agri-food performance, it turned out that Poland, Estonia and Lithuania were the winners of EU accession, while Slovakia, Latvia and Hungary appear to be the losers in this regard. The second part of the identified some possible reasons behind changes.

On the whole, it turned out that post-accession performance in the agri-food sector differed to a great extent. Although all countries gained with EU membership, NMS used their possibilities to a different extent. Reasons behind changes are numerous, though future research might want to quantify them to make our results more valid.

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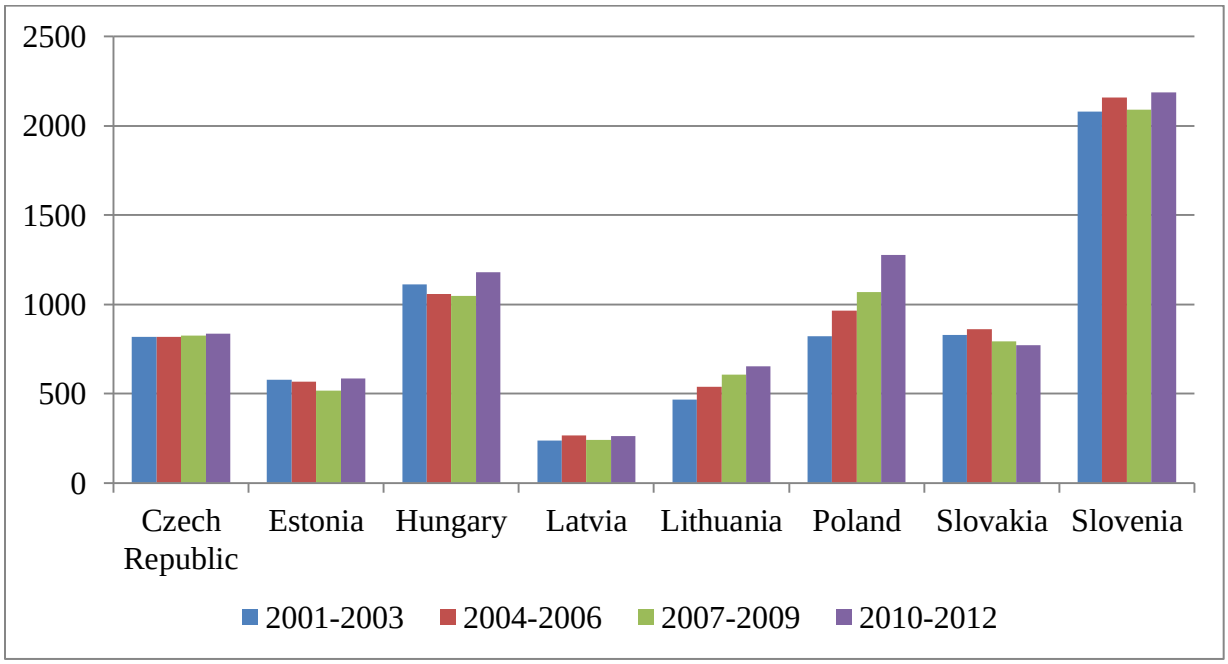
TABLES AND FIGURES

Figure 1 **Agricultural output per hectare in real terms in the NMS, 2001-2012 (euro/ha)**



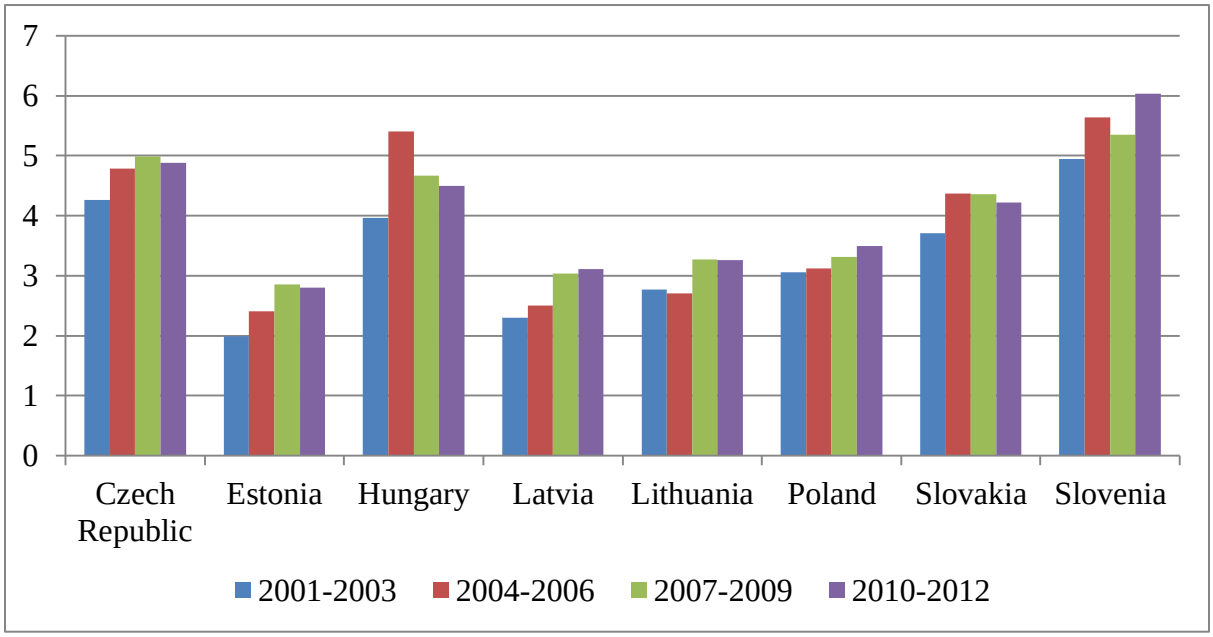
Source: Own composition based on Eurostat (2014) and FAO (2014)

Table 1 **Agricultural performance indicators in the NMS**

Country	Gross Production Value/UAA	Cereal Yield	Milk Yield	Farm income	Agri-food Trade Balance	Average	Rank
Czech Republic	15	4	49	8	5	16	6
Estonia	13	100	100	100	12	65	1
Hungary	21	0	1	0	19	8	7
Latvia	28	80	72	46	14	48	4
Lithuania	74	16	73	54	91	62	2
Poland	100	4	53	31	100	57	3
Slovakia	0	2	0	11	6	4	8
Slovenia	19	31	75	3	0	26	5

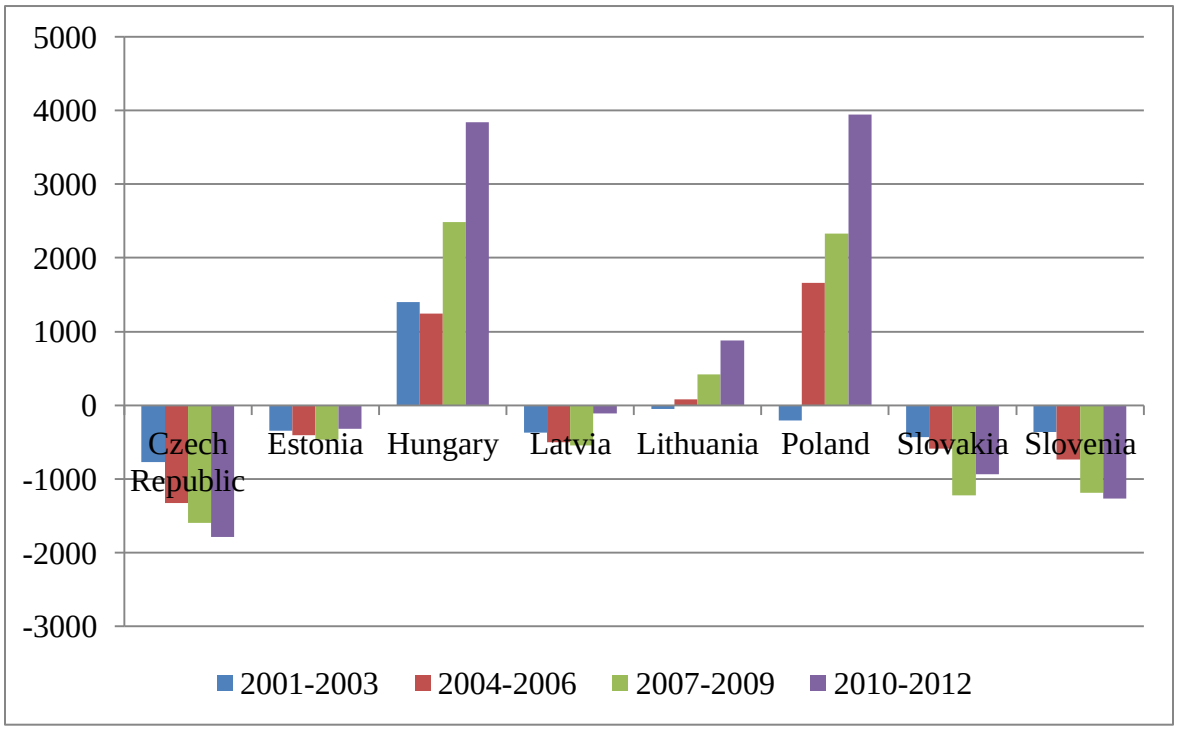
Source: Own calculations.

Figure 2 **Yields of cereals in the NMS, 2001-2012 (tonnes/ha)**



Source: Own composition based on Eurostat (2014)

Figure 3 **Agri-food trade balance of the NMS, 2001-2012 (million USD)**



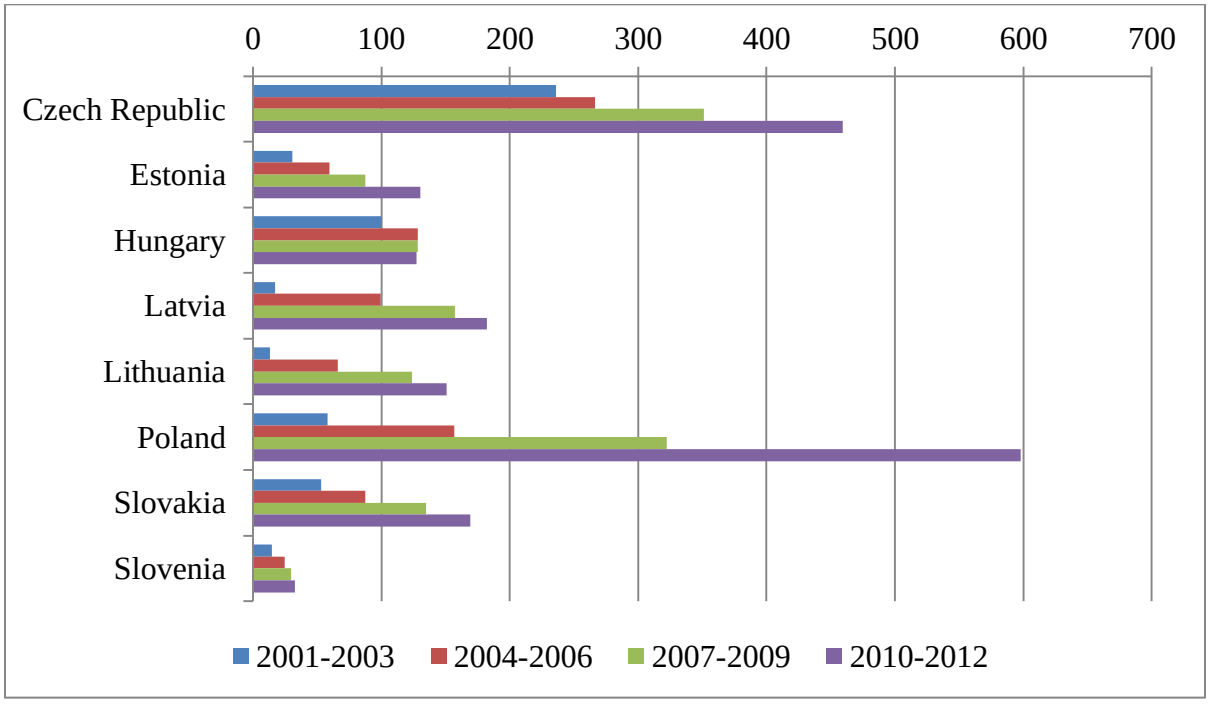
Source: Own composition based on WITS (2014)

***Table 2* Agri-environmental performance indicators in the NMS**

Country	GHG	Organic	Phosphorus	Nitrogen	Meadows and pastures	Average	Rank
Czech Republic	88	6	100	61	41	59	2
Estonia	7	29	76	50	100	52	4
Hungary	94	0	87	65	16	52	5
Latvia	0	89	0	0	43	26	8
Lithuania	33	100	n.a.	n.a.	0	44	7
Poland	48	87	46	29	33	49	6
Slovakia	100	19	98	42	11	54	3
Slovenia	91	9	87	100	31	64	1

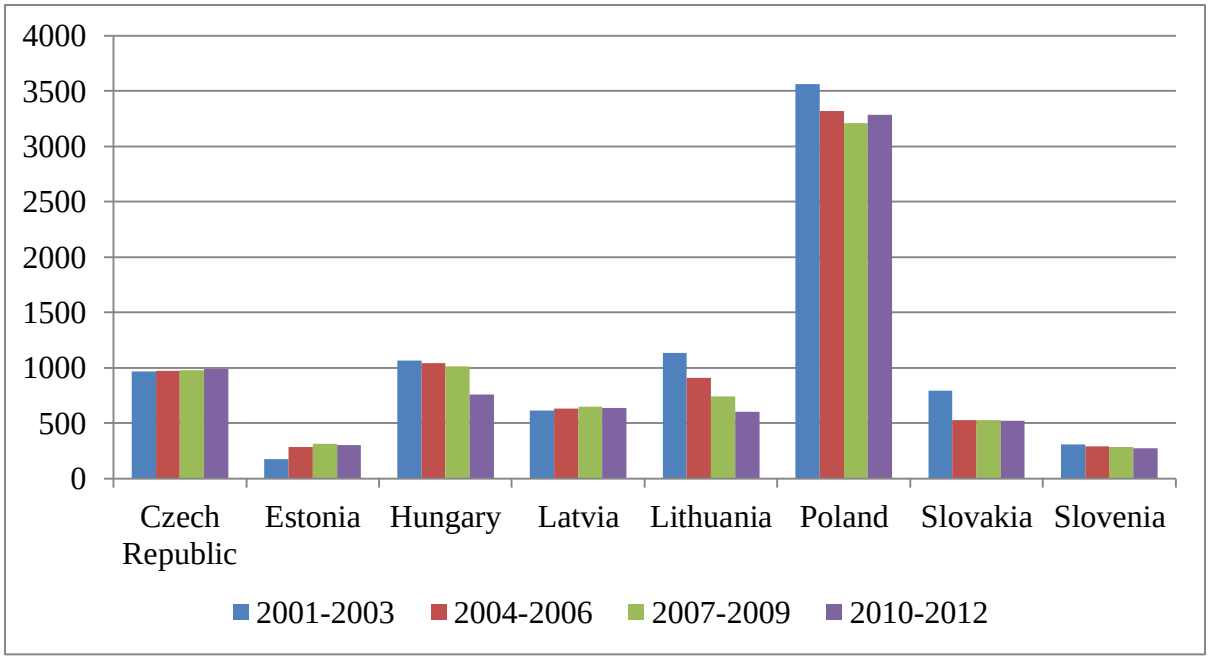
Source: Own calculations.

***Figure 4* Organic area in NMS, 2001-2012 (1000 hectares)**



Source: Own composition based on FiBL-IFOAM Survey 2014

Figure 5 **Permanent meadows and pastures in the NMS, 2001-2012 (1000 hectares)**



Source: Own composition based on Eurostat (2014)

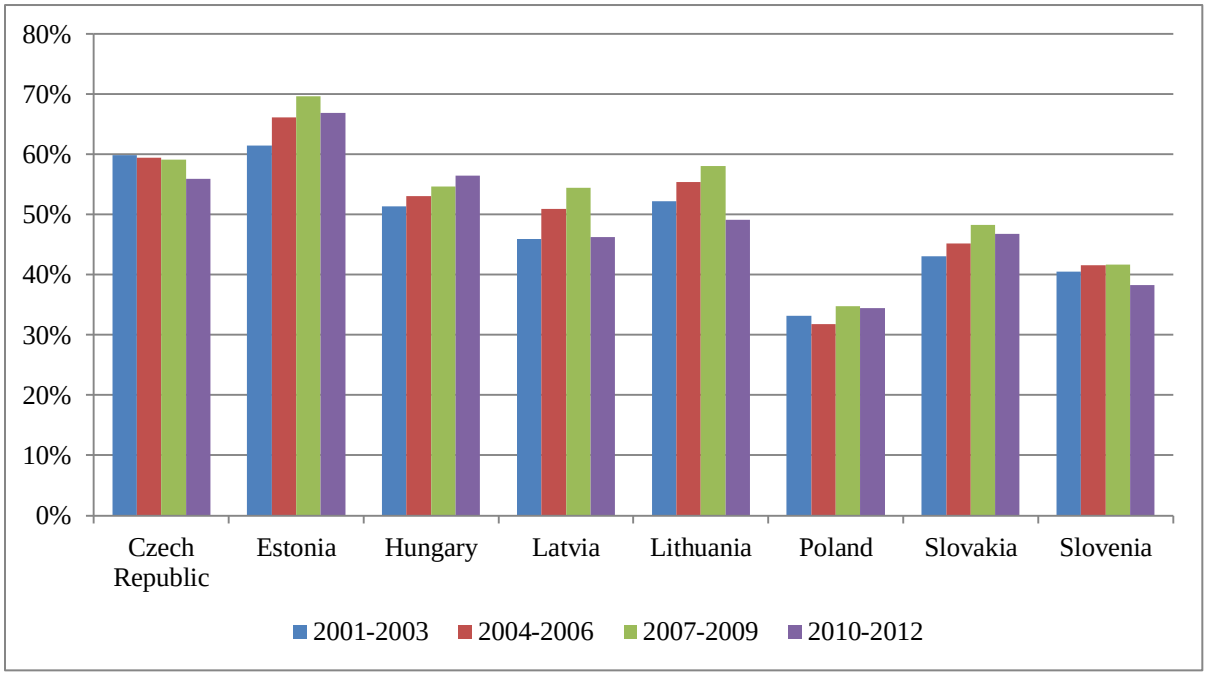
Table 3 **Rural performance indicators in the NMS**

Country	Rural population	Rural employ-ment	Urban-rural GDP gap*	Motor-ways	Early leavers	Average	Rank
Czech Republic	100	52	64	41	16	55	3
Estonia	50	72	n.a.	27	22	43	4
Hungary	0	38	n.a.	90	0	32	8
Latvia	21	25	40	n.a.	62	37	7
Lithuania	12	0	100	0	100	42	6
Poland	83	77	82	100	23	73	1
Slovakia	92	100	92	57	13	71	2
Slovenia	99	56	0	38	15	42	5

** Latest data available for urban-rural GDP gap is 2009.*

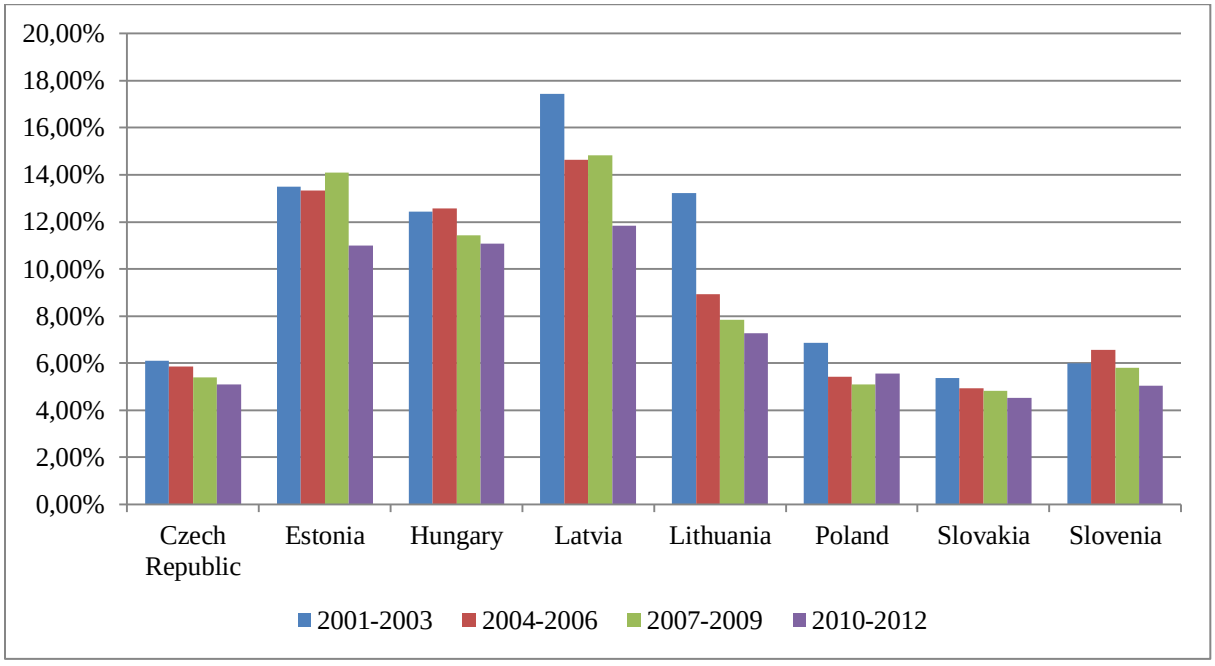
Source: Own calculations.

***Figure 6* Rural employment in the NMS, 2001-2012 (%)**



Source: Own composition based on Eurostat (2014)

***Figure 7* Early leavers from education and training by sex and employment status (% of total population)**



Source: Own composition based on Eurostat (2014)

Table 4 **The agri-food performance index in the NMS**

Country	Agriculture	Environment	Rural	Average	Rank
Czech Republic	16	59	55	43	5
Estonia	65	52	43	53	2
Hungary	8	52	32	31	8
Latvia	48	26	37	37	7
Lithuania	62	44	42	50	3
Poland	57	49	73	60	1
Slovakia	4	54	71	43	6
Slovenia	26	64	42	44	4

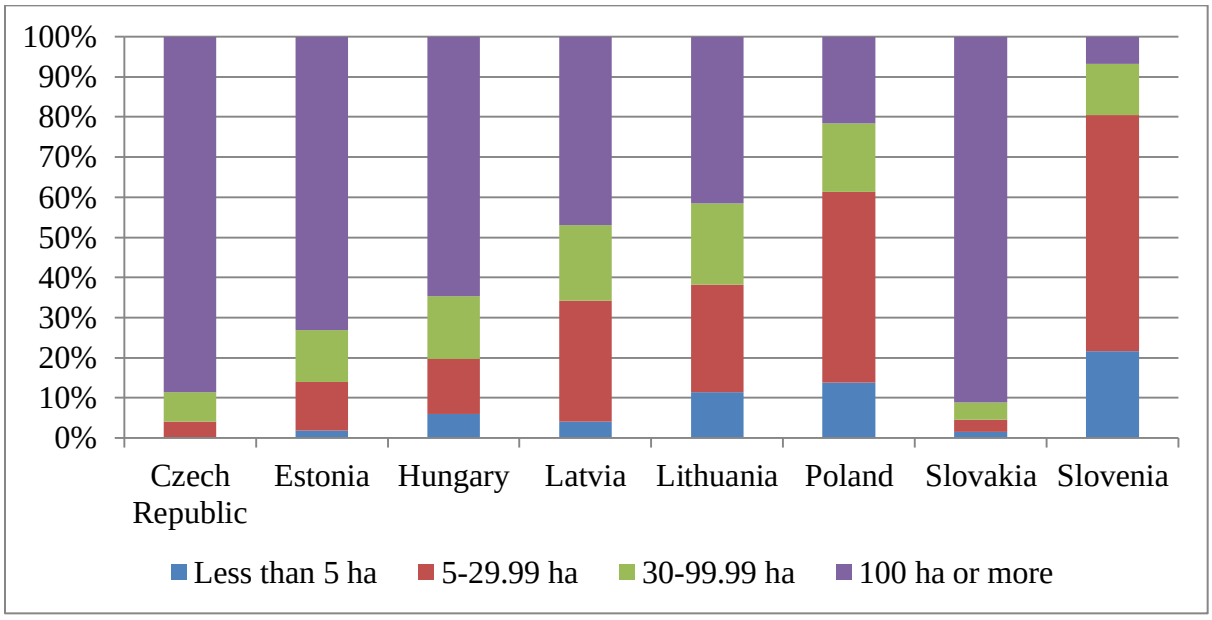
Source: Own calculations.

***Table 5* Changes in factors of production in the NMS, 2001-2012**

Country	Utilised Agricultural Area (1000 ha)			Agricultural labour (1000 AWU)			Fixed agricultural capital (million euro)		
	2001-2003	2010-2012	Change	2001-2003	2010-2012	Change	2001-2003	2010-2012	Change
Czech Republic	4273	4232	-1%	156	107	-31%	389	464	19%
Estonia	806	947	18%	51	25	-51%	39	70	81%
Hungary	5860	5340	-9%	624	433	-31%	774	832	8%
Latvia	1586	1811	14%	143	83	-42%	34	43	25%
Lithuania	2774	2789	1%	179	144	-20%	147	197	34%
Poland	16952	14692	-13%	2357	2101	-11%	1345	1285	-4%
Slovakia	2243	1938	-14%	128	57	-55%	252	191	-24%
Slovenia	508	471	-7%	103	77	-25%	197	213	8%
NMS total	35001	32218	-8%	3741	3027	-19%	3177	3294	4%

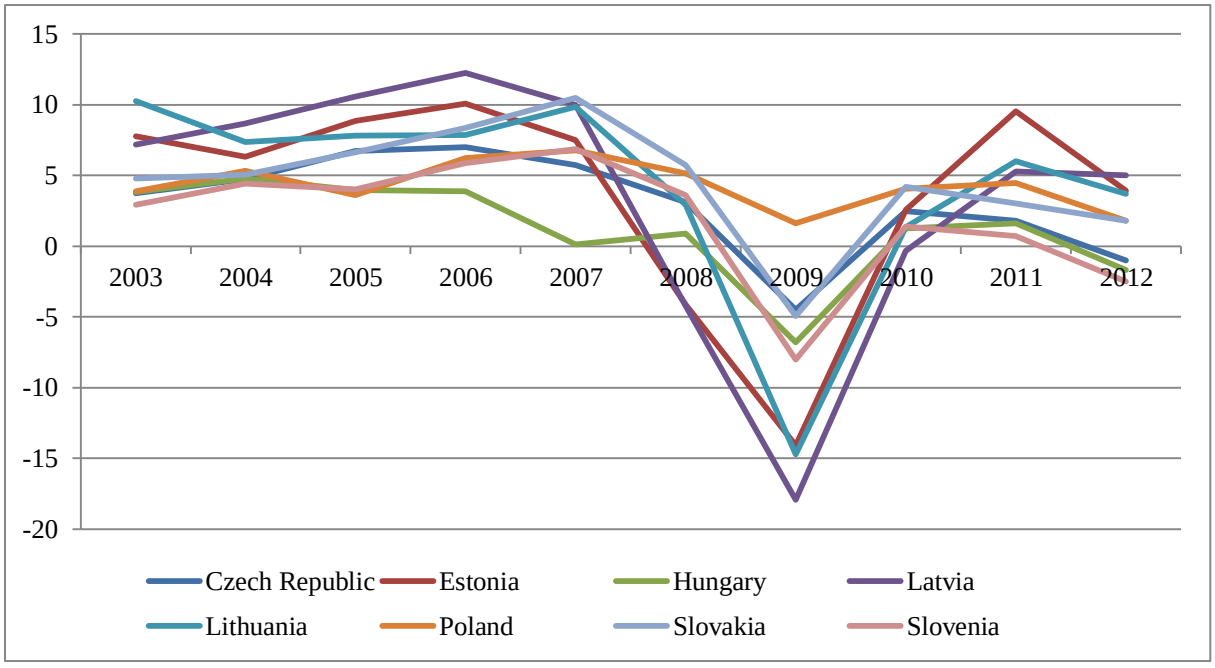
Source: Own composition based on Eurostat (2014) and FAO (2014).

***Figure 8* Share of farms by Utilised Agricultural Area (UAA) in the NMS in 2010 (%)**



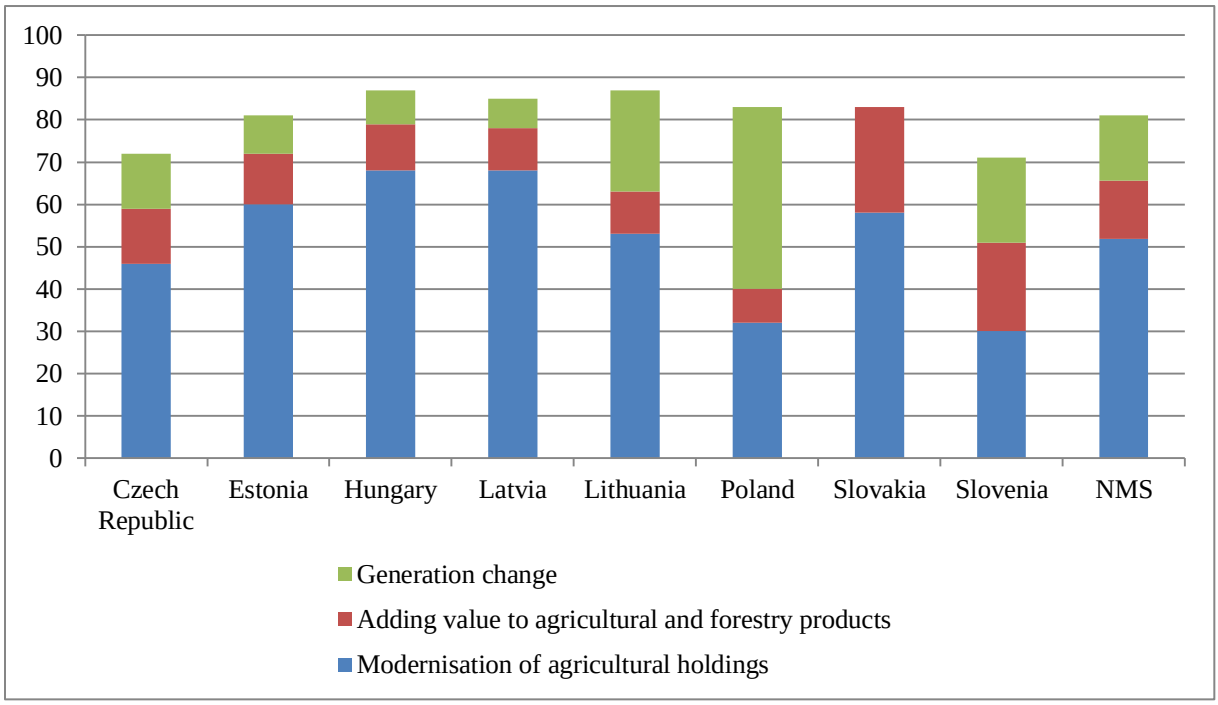
Source: Own composition based on Eurostat (2014)

Figure 9 **Annual GDP growth in the NMS (per centage)**



Source: Own composition based on Eurostat (2014)

Figure 10 **Distribution of the most important first axis payments in the programming period 2007-2013 by NMS (percentage)**



Source: Own composition based on RDR (2013)

Appendix 1 **Definition of indices**

Name	Definition	Unit of Measurement	Source
Agricultural performance indicators			
Gross Agricultural Output per hectare	The index is calculated by dividing gross production value by utilised agricultural area.	euro per ha	EUROSTAT
Yield of Cereals	Harvested production per unit of harvested area for crop products.	tonnes per ha	FAOSTAT
Yield of Milk (Cow)	Average of annual milk yield per animal.	litres per animal per annum	FAOSTAT
Farm Income	Indicator A: Index of the real income of factors in agriculture per annual work unit.	million EUR	EUROSTAT
Agri-food trade balance (HS2)	The difference between the value of the agricultural goods that a country exports and the value of the agricultural goods that it imports.	million USD	WITS
Agri-environmental performance indicators			
Greenhouse Gas Emissions	Greenhouse gas emissions from agricultural practices, expressed in CO2-equivalents	millions of tonnes	EEA
Total organic area	The size of organic crop area in a country.	hectare	FiBL-IFOAM Survey 2014
Use of Phosphorus	Total use of manufactured fertilisers expressed in tonnes of N and tonnes of P.	tonnes	EUROSTAT
Use of Nitrogen			EUROSTAT
Permanent meadows and pastures	The size of permanent meadows and pastures in a country.	1000 ha	FAOSTAT
Rural performance indicators			
Rural population	The number of people living in rural areas.	1000 persons	FAOSTAT
Rural employment	The share of people being employed in rural areas	%	EUROSTAT
Rural - Urban GDP Gap	The difference between urban and rural GDP at market prices.	EUR per inhabitant	EUROSTAT
Motorways density	The length of motorways divided by the size of the country	km per 1000km^2	EUROSTAT
Early leavers from education and training	The percentage of the population aged 18 to 24 having attained at most lower secondary education and not being involved in further education or training.	% of population	EUROSTAT

Source: Own composition