SZENT ISTVÁN UNIVERSITY
Doctoral School of Management and Business Administration

FARM LEVEL IMPACTS OF THE EU ACCESSION AND AGRICULTURAL POLICY DEVELOPMENTS (CHANGES IN PAYMENT SYSTEM)

THESES OF DOCTORAL (PHD) DISSERTATION

Written by: **Törőné Dunay Anna**

Supervisor: **Prof. Dr. Székely Csaba, DSc**

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Name of School: **Doctoral School of Management and Business Administration**

Research field: **Management and Business Administration**

Head of School: **Prof. Dr. Szűcs István**
Full professor, doctor of the Hungarian Academy of Science
Szent István University, Faculty of Economics and Social Sciences
Institute of Economics and Methodology

Supervisor: **Prof. Dr. Székely Csaba**
Full professor, doctor of the Hungarian Academy of Science
University of West Hungary, Faculty of Economics

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Approval of the Head of School **Approval of the Supervisor**

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1. Introduction

1.1 Relevance of the topic

The importance of evaluating the different impacts of the EU accession has not decreased in the last decade. Some of the problems, such as the problems of competitiveness and effectiveness of the agricultural sector, or the delay of the transformation of the payment scheme are still unsolved. The continuous learning process has not ended by the accession; not only the institutions but also the individuals shall observe and learn the changes of the agricultural policy, which of course, means a heavy task for the farmers besides the management of their farming activities.

In my dissertation, I wished to examine, how could the agricultural enterprises utilize the advantages of the EU accession, what kind of problems has derived during the accession process. I also wished to explore the direct effects of the accession on the agricultural enterprises, whether the "winners" and the "losers" can be defined, or not?

As the draft of the new CAP reform was announced in last October, the readiness of the farmers will have great importance in the future. Without knowing the new system, the opportunities cannot be utilized, and without taking these advantages, we cannot speak about a competitive and effective agricultural sector.

1.2 Objectives of the research

The first objective of my research was to make a comprehensive macroeconomic analysis of the Hungarian agricultural enterprises. The operation, the financial situation and the production results of different enterprises are determined by their macroeconomic background (i.e. agricultural policy, economic, social and environmental background etc.), which is particularly true for agricultural enterprises. Therefore, the first objective of my dissertation is may be divided for different parts:

- The **political factors,** in this case, means mostly the Common Agricultural Policy, its development process as well as the complex introduction of its present system and the proposals for the future.
- In the assessment of the **economic factors** the main features of the Hungarian agriculture, the most important measures, programmes and tasks are summarized from the pre-accession period until 2009.
- The last step of the macroeconomic analysis was to explore the **social, technological and environmental dimensions** of the Hungarian farms, by statistical data and literature sources. The **legal** factors were not explored in my thesis, as they are mostly covered by the legal rules and regulations of the CAP.

The **second objective** of my research was the economic analysis of agricultural enterprises in the post-accession period (2004-2008), according to their financial situation, their profitability and efficiency in particular. This analysis were based on the **international FADN database** for Czech Republic, Poland, Hungary, Slovakia (i.e. the Visegrad countries) and the average of the EU-15 member states.

The **third objective** of my research was to explore the main financial and economic features of the Hungarian agricultural enterprises, and to conduct statistical analyses with their main

efficiency and profitability indicators on the base of the data of the Hungarian FADN system, in the period between 2002 and 2009.

The **fourth objective** of my research was to summarize the opinion and attitudes of the Hungarian farmers, in connection with the EU accession by the data of my own survey, which was carried out in 2004 and 2008/2009) in one of Hungary's NUTS regions.

1.3 Hypotheses of the research

In the first step of my researches, the following hypotheses were been formulated:

Hypothesis 1 (H1) – The EU accession will have positive impacts on the Hungarian farms a result of the EU supports and the stable Common Agricultural Policy. This hypothesis is based mostly on the different studies, publications, research results and the expectations of the agricultural enterprises. According to the second part of this hypothesis, the information level of the farms will improve after the accession.

Hypothesis 2 (H2) – As a result of the accession, the gap between the income level of Hungarian and EU-15 agricultural farms will close.

Hypothesis 3 (H3) – The financial situation of the Hungarian agricultural farms will improve after the accession, as a result of the stable agricultural policy, the payment system, and the new market situation.

H3a – The financial status of the agricultural enterprises will improve after the accession.

H3b – The capital structure of the Hungarian agricultural enterprises will improve, because of direct payments.

H3c – The more stable the agricultural policy, the better the efficiency of resource use.

Hypothesis 4 (H4) – The positive and negative impacts of the EU-accession may be distinguished according to farm sizes and types of farming.

Hypothesis 5 (H5) – The increasing income level will improve the volume of investments in the agricultural enterprises.

2. Material and method

The data for the analysis of the macro-environment of the agricultural enterprises are originated from several different documents connected to the CAP (i.e. directives, regulations, Commission proposals and strategic documents), and the relevant domestic rules and regulations. The economic, social and environmental factors of the examined countries were processed on the base of secondary sources of the HSO and EUROSTAT database.

The financial and economic status of the examined agricultural enterprises was performed through the secondary sources of the international FADN database and the primary data of the Hungarian database of the Farm Accountancy Data Network.

A survey was carried out for the completion of my researches by the expectations and experiences of the Hungarian farmers. The survey, which was conducted in 2004 and 2008/2009, could generate primary sources to my thesis.

The objectives of my researches and thesis, the used data sources and the methods of their procession are detailed in Table 1.

Table 1.: The objectives of the thesis, its data sources and the methods used

Objective	Material	Method
1. Macro-environment analysis of agricultural enterprises in connection with the EU accession process.	▪ Literature sources ▪ EU documents ▪ HSO and EUROSTAT data	▪ PESTEL analysis ▪ Analysis of literature sources ▪ Document analysis ▪ Descriptive statistical methods
2. International comparative analysis of agricultural enterprises in V4 and EU-15 countries.	▪ FADN public database ▪ Statistical data (OECD, EUROSTAT, HSO)	▪ SWOT analysis ▪ Financial analysis of agricultural enterprises ▪ One-way ANOVA
3. Financial analysis of Hungarian agricultural enterprises in the 2002-2009 period.	▪ Hungarian FADN database	▪ Financial analysis of agricultural enterprises ▪ Cross table analysis (Chi-square tests) ▪ Multi-way ANOVA ▪ Regression analysis
4. Evaluation of the expecta-tions and experiences of Hungarian agricultural enterprises about EU accession.	▪ Questionnaire survey in 2004 and 2008/2009	▪ Descriptive statistical methods ▪ Comparative analysis

Source: own composition

3. Results

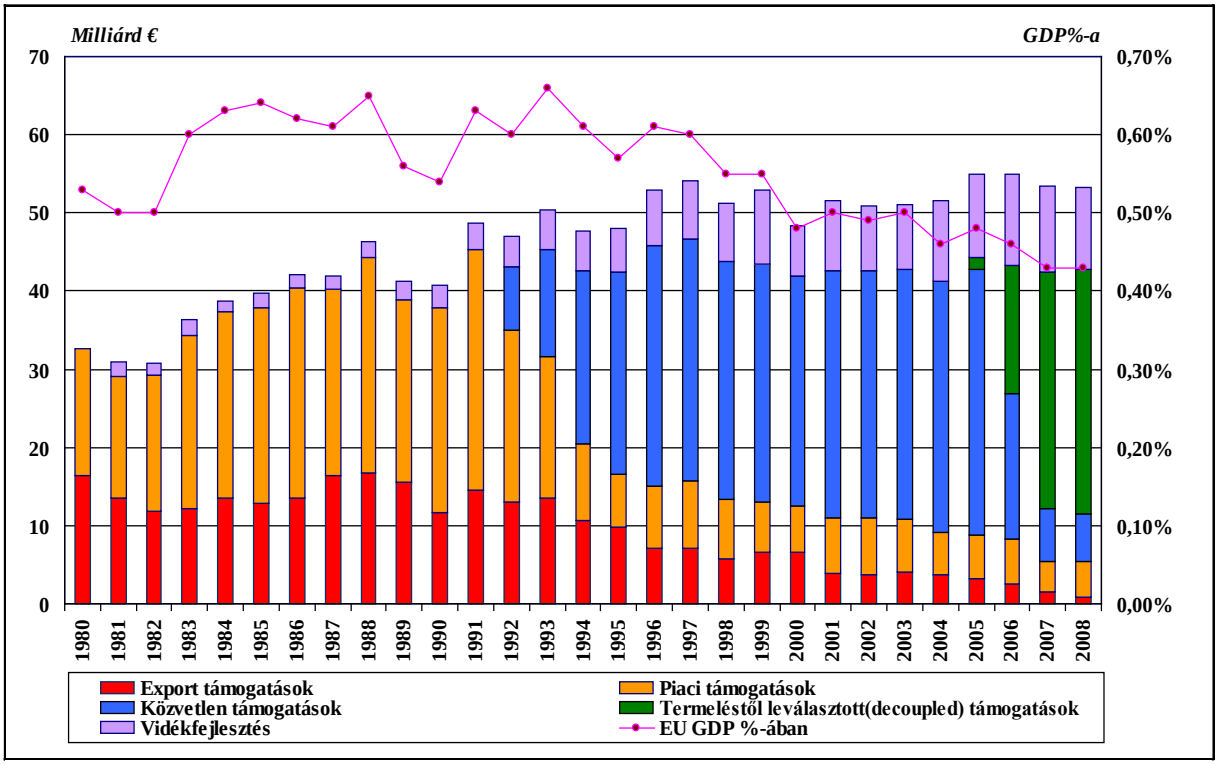
3.1 Evaluation of the Common Agricultural Policy developments through the payment system

In the first stage of the research, the developments of the Common Agricultural Policy were summarized in a complex, system approach, in accordance of the changes of its supports and payment system.

The payment system of the CAP had to be undergone several changes and adjustments in the past decade for different external causes, such as the global demographic and food crisis, the changing requirements of the world market or the increasing threat of the climatic change. Of course, several internal causes were also derived from the increasing load of the Community budget, the eastern enlargement of the EU and the economic crisis.

The differences of the development stages and their different preferences are illustrated in Fig. 1, in which, these changes may be followed through the share of the payments in the CAP budget from the 1980ies until present.

Figure 1.: The CAP budget from 1980 to 2008 (in 2007 prices)



Source: own editing based on HANIOTIS (2009)

The different preferences of different reforms may be well distinguished in Fig. 1. In the 1980ies, the different market supports were the most determinant, the McSharry reform introduced the direct payments in 1992, which share became the largest in the CAP budget. The decrease of direct payments started by the 2003 reform, in which the decoupled support was introduced.

Although some of the rural development subsidies have been in force since the 1980ies, the breakthrough happened in 1999, by the establishment of the Second Pillar in the Agenda 2000 programme. Nowadays the CAP budget shall be decreased; it is a key consideration of the WTO requirements to be in accordance with.

In Table 2, the different types of CAP subsidies are summarized from the early years (original CAP) until the present (CAP 2014). The different subsidies and payments, of course, are overlapped, as in the early years most of the subsidies have not been differentiated according to types. At the present, these types of support are rearranged as a result of modulation.

Table 2.: The evolution of CAP payment system from 1960 until present

<table>
<tr><th rowspan="2">Period</th><th colspan="6">Type of support</th></tr>
<tr><th>Market support</th><th colspan="2">Direct support</th><th>Rural development</th><th>Other rural development</th><th>Environ-mental</th></tr>
<tr><td>Original CAP</td><td>▪ Price subsidies
▪ Intervention
▪ Export subsidies
▪ External protection</td><td colspan="5">Less favoured areas (since 1975)</td></tr>
<tr><td>CAP 1992</td><td>▪ Price cuts
▪ Quantitative restrictions
▪ Intervention
▪ Export subsidies</td><td colspan="2">▪ Compensatory payments
▪ Standard payment system</td><td colspan="2">Small farmers subsidies</td><td>▪ Extensifi-cation premium
▪ Set aside</td></tr>
<tr><td>Agenda 2000</td><td>▪ Price cuts
▪ Quotas and set aside
▪ Intervention
▪ Export subsidies</td><td colspan="2">Cuts of compensatory payments</td><td>Formation of Second pillar</td><td>Agri-environmental programmes</td><td rowspan="3">Cross compliance</td></tr>
<tr><td>CAP 2003</td><td>▪ Intervention
▪ Cuts in export subsidies</td><td rowspan="2">▪ SPS
▪ SAPS</td><td rowspan="2">Modulation</td><td colspan="2" rowspan="2">Second pillar
▪ Competitiveness
▪ Environmental ly friendly farming
▪ Rural economy development
▪ Development of rural communities</td></tr>
<tr><td>Health Check</td><td>Cuts in intervention</td></tr>
<tr><td>CAP 2014</td><td>▪ Intervention as a safety net
▪ Cut of quantitative restrictions</td><td colspan="2">▪ SPS, with payment ceiling
▪ LFA subsidies in selected regions
▪ Small farmers' scheme</td><td colspan="2">▪ Improving competitiveness
▪ Supporting sustainable farming
▪ Balanced regional development</td></tr>
</table>

Source: own editing

The development process of the CAP has been accelerated since Millennium, if compared with the early decades, the changes appear within the financial periods. The new reform proposal was announced in October 2011.

3.2 Common Agricultural Policy after 2014

On 12 October 2011, the Commission presented a set of legal proposals designed to make the CAP a more effective policy, for a more competitive and sustainable agriculture and rural areas in the period between 2014 and 2020. It should be underlined, this is just a proposal, which should be verified by the Council and the European Parliament, and the EU budget also may be modified. The proposals are in accordance with the previously published communication, namely, the **two strong pillars remain** and the basic structure of the CAP is not radically altered, although the formal objectives now reflect the priorities of Europe 2020 much more explicitly. First Pillar covers **direct payments** and **market measures** providing a basic annual income support to EU farmers and support in case of specific market disturbances, while Second Pillar covers **rural development** where Member States draw up and co-finance multiannual programmes under a common framework which should be harmonized at Community, national, regional and local level.

Thus, First Pillar will contain the direct payments and market measures, where the most significant changes will concern direct payments. According to the proposal, the SPS and SAPS will be replaced by a new supporting system. The main objective of the policymakers was to discontinue the compensation character of direct payments and to bind these payments to the production of **public goods**.

Changes in direct payments

With regard to the direct payments, some aspects were strongly emphasized by the proposal. One of these aspects is to decrease administrative burden, the second is to dissolve differences in direct payments, which are neither evenly distributed by farm sizes, nor by geographical location. In the proposal, **three support levels** were determined according to the support level of the given member state. An EU wide 'flat rate' (or 'EU average') has been determined with the same level of aid per hectare to all farmers in the EU (approx. 270 EUR/ha); those member states with lower direct payments level will be compensated by the surplus redistributed from those members states with higher support than the EU average.

The direct payments would consist of two schemes: the **basic payment scheme** and the simplified scheme, therefore only a unified scheme would be in use for all the member states, in which **compulsory and voluntary measures** are distinguished.

a) Basic payment scheme

- ***Compulsory measures***
  - Not less than 40 % of the national or regional ceiling shall be provided for the **basic payment scheme**. Farmers entitled to a payment under the basic payment scheme shall observe on their eligible hectares 3 agricultural practises which are beneficial for the climate and the environment, and to meet cross compliance provisions;
  - **Greening component** means a payment (30% of annual national ceiling) for farmers following agricultural practices beneficial for the climate and the environment: crop diversification, maintenance of permanent pastures and ecological focus areas);
  - Member states shall establish the **national reserve** by reducing their basic payment scheme ceiling. This reduction shall not be higher than 3 %;
  - **For young farmers** a payment shall be provided (up to 2% of annual national ceiling) in their installation, which may be complemented by setting up aid under rural development.

- ***Voluntary measures***
  - In areas with natural constraints, 5% of the national ceiling may be redistributed. By this amount the Second Pillar supports may be supplemented;
  - Member States may grant coupled support to farmers. This support may only be granted to sectors or to regions of a Member State where specific types of farming or specific agricultural sectors undergo certain difficulties and are particularly important for economic and/or social and/or environmental reasons.

b) Simplified scheme for small farmers

Member States shall set the amount of the annual payment for the small farmers by an amount not exceeding 10 % of the national average payment per beneficiary. Farmers wishing to participate in the small farmers' scheme shall submit an application by 15 October 2014, the amount of the payments shall be between EUR 500 and 1 000. Those farmers who participate in this scheme, shall not be beneficiaries of other schemes. The simplified small farmers' scheme will have less administrative burden than the basic scheme and the farmers shall not be conformed to cross compliance requirements.

According to the new schemes of direct payments, the payments will have not only national ceiling but also they are maximized per beneficiaries. Farmers wishing to participate in the new basic system shall submit an application by 15 May 2014; the support shall be provided only for **active farmers**.

Changes in market measures

Intervention, private storage and export refunds will remain, but they will not be financed by the First Pillar. In case of unexpected events (e.g. market disturbances, animal health problems, or other unexpected events) additional measures shall also be introduced.

Rural development policy retains the long-term strategic objectives of contributing to the competitiveness of agriculture, the sustainable management of natural resources and climate action, as well as balanced territorial development of rural areas. In line with the Europe 2020 strategy, these broad objectives of rural development support for 2014-2020 are given more detailed expression through the following **six EU-wide priorities**:

- fostering knowledge transfer and innovation in agriculture, forestry and rural areas;
- enhancing competitiveness of all types of agriculture and enhancing farm viability;
- promoting food chain organization and risk management in agriculture;
- restoring, preserving and enhancing ecosystems dependent on agriculture and forestry;
- promoting resource efficiency and supporting the shift towards a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors;
- promoting social inclusion, poverty reduction and economic development in rural areas.

3.3 International comparative analysis of agricultural enterprises

In the first part of the international comparative analysis, I summarized the most important features of the Visegrad countries, and, by a SWOT analysis I determined the most important factors influencing the agriculture of these four countries. As the second step of this part of my researches, I made a financial analysis of the agricultural enterprises of Visegrad countries on the base of the data of FADN public database. It should be underlined, that my researches were connected to the **financial processes and not for the results of real processes**.
For the analysis of the financial situation of agricultural enterprises, I determined **20 indicators**, which were classified into five groups: capital structure, profitability, efficiency, liquidity indicators, and special indicators for EU supports.

In the selection of the examined farm types, the most determinant factors were the domestic significance of the given farm type and the possibility of comparability. Only the field crops producer, dairy and mixed farm types could be inserted into the comparative analysis, because of missing data of some member states.

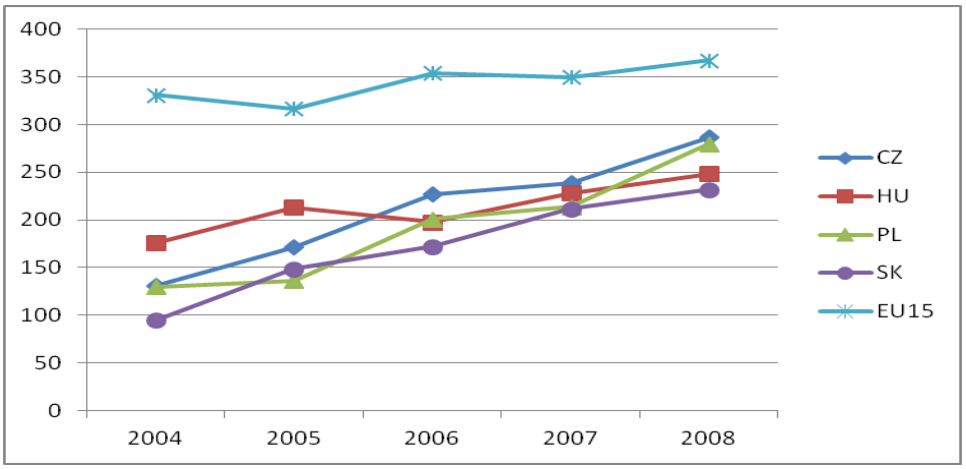
According to the assessment of the database, it can be observed, that capital intensity is higher in case of **smaller farm sizes**, i.e. the **share of own capital is higher** in their capital structure. The **capital intensity of Hungarian farms is lower** than the EU-15 average and the Visegrad countries in all farm size categories. In case of the V4 countries – and particularly Hungary – ,a **certain increase** may be observed **in self-financing capability**, but the **convergence to the EU-15 average has not been occurred yet**.

I had to introduce a **new category of profitability**, namely the **result of agricultural production.** Some financial categories are not registered in the public FADN database, thus I could not calculate the well-known and widely used ROA, ROE and ROS ratios. According to the results of my examinations, the f**arm level profitability indicators of the V4 countries has not been improved substantially**. In case of Hungary, a slight improvement may be observed, but in case of the other Visegrad countries stagnation or a small decrease of this indicator is general. The **profitability ratio is better in large farm sizes**. In case of Slovakia and the Czech Republic, the values of the profitability ratio are rather variable. **As a result of the low profitability level, the self-financing capability of the agricultural enterprises could not improved substantially after the EU accession.**

The **values of liquidity indicator** in every farm size categories were generally high, both in EU-15 and in Visegrad countries. The liquidity in EU-15 average was higher than in the V4 countries except Slovakia, where extremely high values could be observed in every farm size categories and all farm types. The values of **net working capital** were positive and showed an increasing tendency in all countries; this indicates the spreading of **conservative financing strategy**. Conservative financing strategy is stable; it uses long-term funds to finance all of a firm's projected needs and it uses short-term funds only in emergencies, which will not make the capital structure more expensive. Nevertheless, in case of the V4 countries, most of the agricultural enterprises are not creditworthy and the foreign capital more expensive than own sources. Thus, the spreading of **conservative financing strategy** is not absolutely resulted by awareness, but rather by **compelling reasons**.

The examination of **payments and supports per hectare** resulted that the values of EU supports per hectare are lower in the V4 countries than in the EU-15 average, but they showed convergence in accordance with the Copenhagen Agreement (Fig.2.).

Figure 2.: Overall support per hectare in EUR between 2004 and 2008 in the examined countries (average of all farm sizes)



Source: Own calculations based on FADN public database

The results of the examination of payments and supports per hectare showed nearly the same values in all farm sizes in the EU-15 member states, while in the V4 countries different farm size categories had different supporting level. In Visegrad countries, large farms had significantly higher values of support, which suggest that large agricultural enterprises could apply more successfully for different types of support. It may have several reasons, but probably it is caused by their better information level, the better professional knowledge of their employees, their better relations, or, they could pay for the services of consultants. As a result of statistical analyses, the ANOVA indicated significant differences between the small (under 40 ESU) and large (above 100 ESU) farm size categories, thus my research results were supported by statistical methods.

According to the results of my **international comparison,** V4 countries could not catch up with the former (EU-15) member states between 2004 and 2008, in contrast with the former – probably too optimistic – expectations. The analysis of supports and the values of the calculated indicators of financial situation revealed that the **increased support and payments level could not make a solution for the farms, as neither the profitability nor the efficiency indicators improved**, despite the income increased significantly because of the EU supports. The share of support in total income could not decrease. In practice, the sum of the EU payments means an optional tool for the agricultural enterprises in the V4 countries, by which credits may be substituted. The volume of income – particularly in smaller farm categories – is determined by the sum of payments and supports; this situation worsened after the accession due to the increased support level. **The present form of EU supports and payments may conserve the unfavourable farm structure; their volume is not enough for modernization and developments, but it is enough for survival, which may preclude the improvement of competitiveness**. In Hungary, this situation is worse, as the Hungarian farm data presented the poorest results, thus Hungary is handicapped in comparison with the Visegrad countries.

3.4 Evaluation of Hungarian agricultural enterprises based on Hungarian FADN data

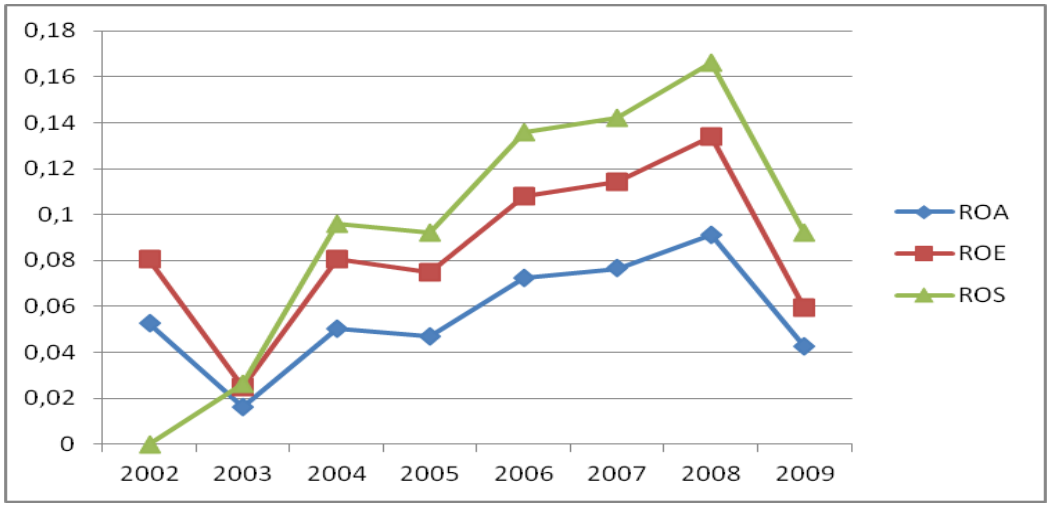
After the international comparison, the second step of my researches was to examine the Hungarian agricultural enterprises, based on the data of the Hungarian FADN system. The Hungarian FADN system includes the data of 1900 agricultural enterprises, but only **742 farms** were chosen for my researches. I examined only those farms, which **provided data for the FADN in the whole examination period** (between 2002 and 2009). By this selection, **I could filter the distorting effects of the changes of data suppliers**.

3.4.1 Evaluation of the indicators according to average farm data

In the evaluation of the Hungarian farms, I followed the same methods I used in the international comparison described in the previous chapters. Thus, I examined the financial status of the selected farms by the help of indicators of capital structure, profitability, efficiency and liquidity, as well as indicators of the supporting level. In this examination – differently from the international comparison – I could use **primary sources** of the Hungarian FADN database, moreover, I could calculate ROA, ROE and ROS ratios of profitability, as they can be calculated from basic data of this database.

During the procession of basic data, it could be observed that the year 2009 has extreme results, which may be seen in Fig. 3, which illustrates the profitability indicator ratios. The **profitability indicator ratios (ROA, ROE and ROS) improved tendentiously** in the examined period, except for 2009. It may suggest the improvement of the self-financing capability of the farms, which is a consequence of the increased level of own capital.

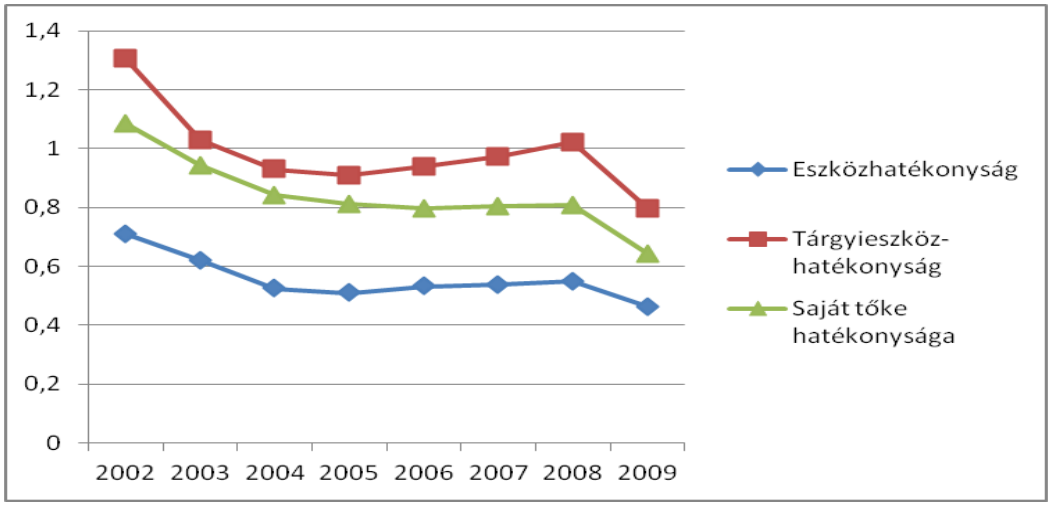
Figure 3.: Profitability indicator ratios in the examined period (average of 742 farms)



Source: Own calculations based on FADN public database

The deterioration of the **efficiency indicators could not improve** by the accession, but it is, at least, moderated. The slight improvement of the marketing opportunities resulted the slowing down of deterioration, but at the end of the examined period – perhaps as a result of the economic crisis – a significant decrease may be observed. The development of the different efficiency indicators are illustrated by Fig. 4.

Figure 4.: Efficiency indicators between 2002 and 2009 (average of 742 farms)



Source: Own calculations based on FADN public database

The details of the basic data showed that the value of assets increased more significantly than the revenues. The **efficiency could not improve after the accession** – in spite of the expectations – , and, instead of improvement, only **stagnation** may be observed.

The average data of the 742 farms could only be used to show the main tendencies, the real impacts on the accession on the financial status of the Hungarian farms should be assessed by additional examinations.

3.4.2 The impacts of EU accession on the profitability of Hungarian agricultural enterprises

In accordance with my H4 hypothesis, one of the main objectives of my research was to explore the **impacts of the accession** on different farm sizes and types of farming, and to demonstrate that **the positive and negative impacts of the accession may be distinguished according to farm sizes and types of farming**. At first, I had to find **a base for comparison**, which is able to present the real financial performance of the different agricultural enterprises. Based on the domestic and international sources, the **ROE ratio** was chosen as a top-indicator, and was used during the additional examinations.
My basic concept was to **exclude all the distorting factors** of the database (i.e. impacts of weather price changes, inflation etc.) thus I could **examine the impacts of the EU accession exclusively**. For this purpose, **I created two periods** from the original 8 years – before and after the accession – and **the arithmetic average values of ROE were calculated for these two periods.**

The **pre-accession years were 2002 and 2003,** while the years **between 2005 and 2009 represent the post-accession period**. The year of accession (2004) was not classified into these periods, as the EU regulations were not in force nearly in the half of the financial year.

In order to make better comparison, only those farms were selected into the examinations, which **did not change their structure (according to farm size and the type of farming**). Thus, the database had to be reduced, as only **499** of the original database (742 farms) **did not change their farm size, and only 329** among them **did not changed their farm type** either.

Only these 329 farms were drawn into the further examination as farms, which may be considered as the most stable. This database was ranked according to their average ROE

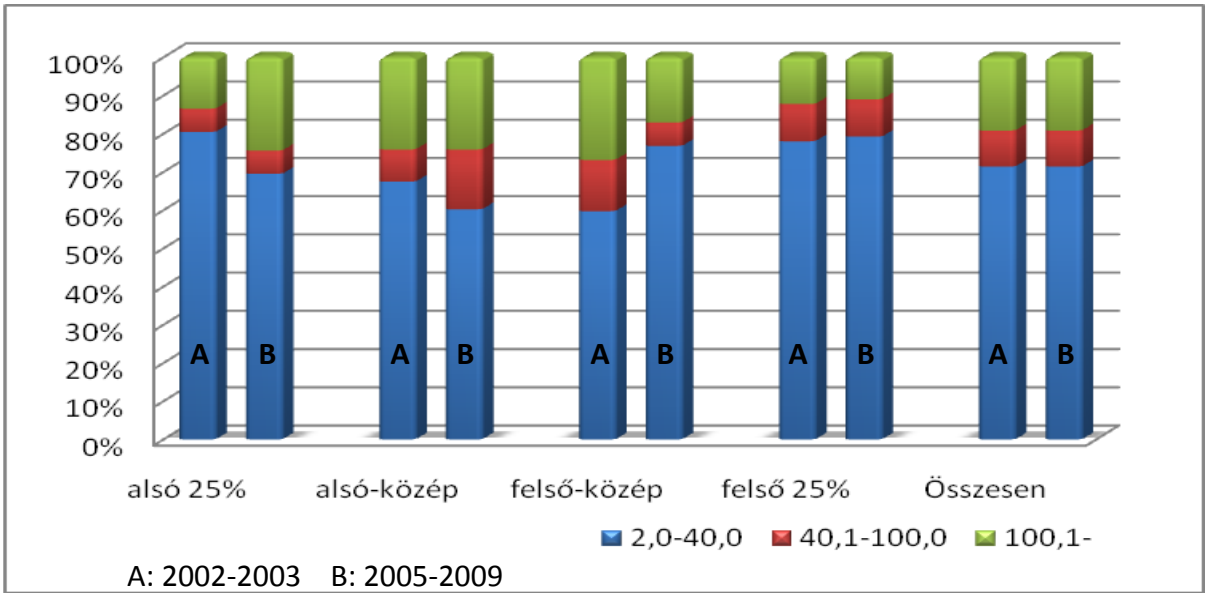
ratios, and by appointing the quartile values, the **farms were ranked according to the quartile groups** (lower 25%, lower-middle, upper-middle, upper 25%). The assessment was conducted according to these quartile groups.

Impacts of farm sizes on the profitability of agricultural enterprises

The changes, which could be observed during the examinations, may suggest that **the average of the ROE ratio has increased more significantly in the small farms,** compared to the large farm size category. The share of the number of farms (A: in the pre-accession period, B: in the post accession period) are shown in Fig. 5. 'Összesen' (Total) columns show the total share of the examined 329 farms, namely 71,4% of the total farms is represented by small farms (<40 ESU), 9,4% is medium (40-100 ESU) and 19,2% is large (>100 ESU) in the given period.

In the pre-accession period („A" columns) the large farms are situated mostly in the two medium (upper-medium and lower-medium) quartile groups according to their ROE ratios, while share of medium farm sizes did not change radically in the lower and upper 25% columns in the two different periods.

Figure 5.: Distribution of farms according to farm size categories by quartile groups according to average ROE values



Source: Own calculations based on FADN Hungarian database

The share of the **small farms** has decreased by 10 per cent in the lower 25% quartile group after the accession. The share of medium sized farms remained unchanged, while the share of the large farms with the lowest ROE values (lower 25%) increased, when compared with the pre-accession period. The shares of **medium sized farms** did not change significantly, only in the lower-medium and upper-medium quartiles; farms of 40-100 ESU moved towards the lower-medium quartile after the accession.

The examination of **large farms** resulted that the share of these farms increased significantly (nearly doubled) in the lower 25%, while in their share in the upper-middle group it decreased by 10% after the EU accession.

The differences of the share of farms according to different quartile groups were justified by statistical methods, both in the assessment by farm sizes and farm types (see Fig. 6).

The changes of the farm sizes are summarized in Table 3. As a result of my calculations, the small farms may be considered as more "successful" after the EU accession according to their ROE ratios.

Table 3.: The changes of the share of farms according to farm sizes, based on the quartile groups calculated by average ROE values between the pre-accession (2002-2003) and post accession (2005-2009) period

Quartile groups	Size categories		
	< 40 ESU	40-100 ESU	> 100 ESU
Lower 25%	↓	–	↑
Lower-middle	↓	↑	–
Upper-middle	↑	↓	↓
Upper 25%	↑	–	↓

Source: own calculations
Legend: ↑: increase; ↓: decrease; – : no change; *n.a.*: no data

Impacts of farm types on the profitability of agricultural enterprises

The distribution of the average ROE values was also examined **by types of farming**. 64,7% of the 329 farms has been represented by farms specialized in field crops production, 10,9% by horticulture, wine and permanent crops, 6,1% by dairy farms, 4,9% by granivores, 1,2% by cattle, sheep and goat production and 12,2% has been represented by mixed farms. 'Összesen' columns of Fig. 6 illustrate the distribution of farms by types of farming.

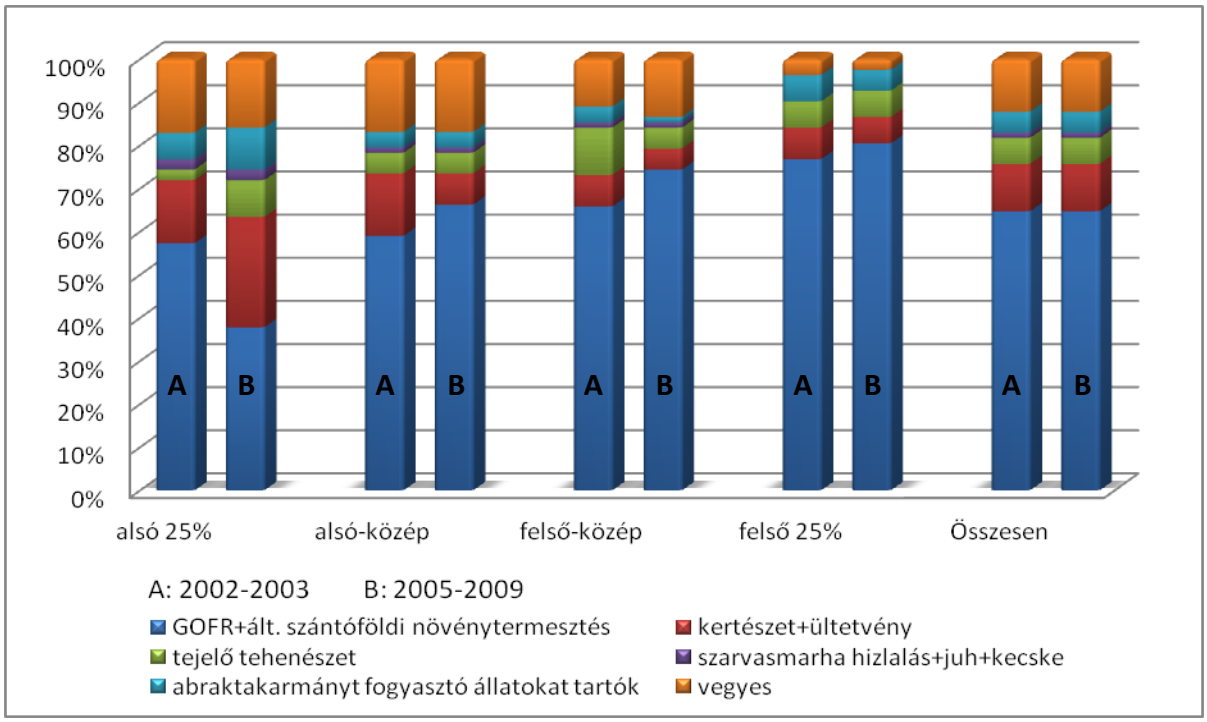
Analysing the Figure 6, the **dominance of the field crop producing farms may be observed in the upper 25% group**, which means that 75% of the most successful farms were specialized in **field crops** in the pre-accession period. Horticulture, wine and permanent crop producing, dairy farms and the granivores production represent nearly the same share in the upper 25% quartile group, while cattle farms are not represented among those farms, which may be regarded as most successful. **In the lower 25% and lower-middle groups** – that means less successful farms – the share of horticulture, wine and permanent crops and the mixed farms is much higher than their share in the total sample.

After the EU accession, this situation changed significantly. The most obvious change in the post-accession period ("B" columns) is the significant decrease (by 20%) of the field crop producing farms in the lower 25% quartile group. This suggests **the stability and the favourable situation of the field crop farms, in comparison with the other farm types**. In the lower quartile groups – that means, in the less successful types – the share of horticulture, wine and permanent crop farming enterprises increased significantly (these farms represented 14,6% in the pre-accession period, and more than 25% after the accession). The share of dairy farms and granivores producing farms also grew in the lower quartile groups after the accession.

The **dominance of field crop farming** is obvious in the **most successful group** (i.e. in the upper 25%), and it shows a slight increase after the accession, meanwhile the share of all the other farm types reduced. These changes show a clear evidence of the success of field crops farming. On the contrary, the **decrease of the specialized, labour- and capital-intensive farm types** (such as horticulture, wine, dairy farms) and the **granivores production** (which has not supported) is also significant in the upper 25%.

Figure 6. shows the distribution of farms according to farm types by quartile groups calculated according to average ROE ratios.

Figure 6.: Distribution of farms according to types of farming by quartile groups according to average ROE values



Source: Own calculations based on FADN Hungarian database

Given that **farms, which changed their size categories and types of farming were excluded from the examination**, and **the positive and negative impacts of the different years were also excluded** by the average data of the two periods, it can be stated, that the changes in the ROE values of the farms were resulted by the EU accession, namely because of its different market and economic conditions, and the new supporting system.

Table 4.: The changes of the share of farms according to types of farming, based on the quartile groups calculated by average ROE values between the pre-accession (2002-2003) and post accession (2005-2009) period

Quartile groups	Types of Farming					
	Field crops	Horticul-ture, wines, permanent crops	Dairy	Cattle, sheep, goat	Granivores	Mixed
Lower 25%	↓	↑	↑	–	↑	↓
Lower-middle	↑	↓	–	–	–	–
Upper-middle	↑	↓	↓	–	↓	↑
Upper 25%	↑	↓	–	*n.a.*	↓	↓

Source: own calculations

Legend: ↑: increase; ↓: decrease; – : no change; *n.a.*: no data

My examinations carried out by the average ROE ratios resulted that the position of field crop farming enterprises increased; the role of cattle and mixed farms remained unchanged, the importance of granivores decreased slightly, while the **horticulture, wine and permanent crop producing** farms and **dairy farms** may be considered 'unsuccessful' as they lost their role after the accession. These changes are illustrated by Table 4.

3.4.3 Regression analysis of different factors influencing profitability (ROE ratio) of agricultural enterprises

As the ROE ratio was selected as a key element of my analysis, therefore, I considered that it is important to explore **the factors, which determine the ROE in the different periods.** In addition, I wished to explore that is there any links between the trends different determinants of ROE and the EU accession.

The database I used in my researches included both **numeric and non-numeric data. The non-numeric variables (such as farm size categories, regions, years, farm types)** therefore, should be converted into dichotomized variables in order to be used in my model. The following **numeric variables** were examined in the model (**per hectare or per animal, in HUF**): fixed assets, current assets, capital reserve, profit reserves, own capital, investments loans, long term loans, short term loans, net sales, export sales, material costs, personal costs, and golden crown value.

As a first step, I examined the data of the 329 farms for the formerly used **six farm types**, but in case of some farm types, the **number of the sample was too low**. Therefore, and for **comparability reasons** some of the farm types was excluded from further examinations. The mixed farms was excluded as they have both crop production and animal husbandry, cattle, sheep and goat farms, as they have agricultural land, and granivores producer farms, as both their technological background profitability features may differ according to they are pig or poultry producers.

The final tests therefore could only be carried out for **field crops producing** farms, **horticulture, wines and permanent crop producing** farms and **dairy farms**; the regression analysis were performed on these types of farming.

The analysis was performed in three steps. At first, the **average data of the pre-accession period** (2002 and 2003 years) were run by the model, secondly I examined the **average data of post-accession years** (2005-2009 years). Thirdly, the total examination period (2002-2009) was analysed by the regression model, where **each year were used as different variables**, in order to determine the different impacts of the different years.

In the different periods different variables entered into the regression model, which was carried out by FORWARD method. In **pre-accession period**, in case of **field crop producing farms** the strongest explaining variable was **profit reserves**, which increasing values were connected to increasing ROE values; the second strongest variable was Northern Great Plain region. When examining the **horticulture, wine and permanent crops farm type** only one variable entered into the model, thus, the strongest explaining variable was **export sales**, with a very high value. In case of dairy farms, the strongest impact was resulted by the variable of **net sales**, in the pre-accession period.

In the post-accession period (2005-2009) the evaluation of the data generated by the FORWARD method it can be stated, that in case of **field crop producing farms** only one variable had determining power: the **value of long-term loans**. Long-term loans mean mostly **bank loans and their interest burden**, thus the negative Beta values of the model may be explained well, as these burden will clearly **decrease profitability**. In crop producing farms the **modernization of the technical background** (machinery, equipment) were financed by long-term loans. In addition to the **interest burden,** the depreciation **of the new machinery** will also **decrease the profitability of the enterprise**. In case of **horticulture, wine and permanent crops producing farms,** there are also differences between the two periods. In the post-accession period, the strongest explaining variable was **short-term loans**; the second variable was the **large farm size**. In this case, short-term loans mean mostly the so-called

'constrained credits', i.e. the **role of suppliers**. In this farm type, it is typical that suppliers play an important role in financing the production process. As the large farms' **bargaining power is very strong against the suppliers**, the enterprises may make delayed payment for the products of the suppliers, thus, this construction means **liabilities without costs** for the farms. The other side of this situation is connected to the production. The materials ensured by the suppliers (e.g. fertilizers, chemicals etc.) may **increase the production level**, which also **improve profitability** of the farms.

In **dairy farms**, two variables entered into the model, **material costs and net sales,** which may be explained by **high feeding stuff prices, which clearly reduces profitability**.

Examining the whole period (between 2002 and 2009) three years entered into the model, as explaining variables of ROE. Year 2003 entered into the model in case of field crop producers and dairy farms; years of 2004 and 2008 entered only in case of field crop farms. By entering the different years as variables into the regression model, **the different impacts of the years were verified by statistical methods**. It also verified my basic concept indirectly that my examinations were made by excluding the distorting effect of the different years, by calculating average data.

By the regression models, I measured and evaluated the **direct impacts** of different variables determining profitability. **In terms of marketing and economic aspects, ROE ratios are significantly determined by these factors.** The results of my regression model are consistent with the former results of my researches, which are detailed in the previous chapter, namely the EU-accession had different impacts on agricultural enterprises with different size categories and farm types. The well-known fact, that different years have different effects on the financial status of agricultural enterprises was also verified by statistical methods by the results of this regression model.

3.4.4 Survey measuring the expectations and opinion of Hungarian farmers about EU--accession

An own survey was conducted in 2004 and 2008/2009 in the Southern Transdanubia region in order to summarize the opinion and the experiences – as well as the problems – of the Hungarian farmers about EU accession. By this survey I tried to size up, how successful the preparation process for EU accession was, particularly in a such a region that is far from the capital, Budapest, and **what expectations and experiences the farmers had about the post-accession period**.

The survey was performed in only one of the Hungarian regions, which, of course, cannot represent all the Hungarian farms, but the survey was conducted by myself, with personal inquiries. Seventy-nine farmers filled in the first questionnaire in 2004, while in 2008/2009; the number of respondents was seventy-one. I could not visit eight farms in 2008/2009; two of them finished agricultural production. In the assessment of the survey, only data of those 71 farms were evaluated, which were respondents in both years.

The results of my survey confirmed that the **information level of the Hungarian farms is low**, and this situation has not improved since the EU accession. Only those farms could follow the changes of the agricultural policy and the EU financial system, which leader or family members have higher education, which had financial sources for the services of consultant agencies, or, which have more employees, and the farming activities and administrative tasks may be separated.

4. New scientific results

1. **Complex and system-based approached summary of the Common Agricultural Policy from its formation until 2011.**
   In my dissertation, the development of the Common Agricultural Policy was summarized in a new, complex, system-based approach from the 1960ies until present.
2. **Detailed analysis of the macroeconomic background of Hungarian agricultural enterprises from the EU-accession until present.**
   In my dissertation, I completed a full macro-environmental analysis of the Hungarian agricultural enterprises by the PESTEL method. In this process the different political, economic, social, technical-technological, environmental and legal factors, as well as their impacts were summarized by literature sources and the analysis of statistical data. In the analysis of the political and legal factors not only the Hungarian political background was examined, but also the impacts of the CAP were taken into consideration.
3. **A complex summary of the possible impacts of the latest agricultural policy developments (according to the Commission proposal of October 2011) on Hungarian agricultural enterprises.**
   The latest proposal of the Commission outlines the proposed changes after 2014, which may lay down the directions of a new, adjusted Hungarian agricultural strategy. According to the experiences of the past few years, the Hungarian agriculture could not take the advantages of the EU-accession, thus, the convergence towards the former EU member states failed. The Commission proposal may give a new opportunity to the convergence of the Hungarian agricultural enterprises – or at least – to prevent their slipping down. After the interpretation of the proposal, a broadened information campaign towards the stakeholders, with new, improved information strategy may be started in time.
4. **The evaluation of farm-level (microeconomic level) impacts of the EU-accession in Visegrad countries, namely on the financial status and the profitability and efficiency of the agricultural enterprises.**
   In Hungarian and international literature sources the EU-accession was evaluated mainly at macroeconomic level, where the assessment of farm-level impacts were determined as only as partial objectives. My researches were carried out on the international and Hungarian database of the FADN, which is the only harmonized database at microeconomic level in the EU. According to the results of my researches it can be stated, that Hungary could use less advantages of the EU-accession compared to the other V4 countries.
5. **As a result of my examinations conducted on the database of the Hungarian FADN system (years between 2002 and 2009) significant differences may be distinguished in the profitability of agricultural enterprises according to farm sizes and types of farming.**
   By the assessment by statistical examinations of the ROE ratio, as a key element of my examinations, the ‘winners’ and ‘losers’ of the accession could be determined, both by farm sizes and by types of farming. As a result of my examinations, the relative expansion of field crop producing farms was determined. Mixed farms, which changed their producing profile, transformed towards specialization in field crop farming. In my research, I also examined how the different qualitative and quantitative factors can determine the ROE ratio of agricultural enterprises.

6. **The localization of the beneficiaries of the CAP supports by farm sizes.**
   I detected, that the beneficiaries of the EU supports may be distinguished by farm sizes in the V4 countries. While in the EU-15 member states the volume of the supports per hectare was at the same level in each farm size categories, in Visegrad countries large farms have significant advantages in obtaining the Second Pillar (co-financed) supports compared to small and medium farm sizes.

5. Conclusions and recommendations

Summarizing the results of my researches it can be stated, that the impacts of the EU-accession could not meet the – mainly too optimistic – expectations. Although the convergence to the EU-15 member states has already started, the advantages of the EU membership have not been taken in several fields. The agricultural policy, which was considered stable has undergone continuous changes resulted by the global changes, such as climate change, environmental problems and economic crisis. The change is quite actual in present days, as the proposal of the Commission for the Common Agricultural Policy after 2014 was announced in October 2011.

The **H1 hypothesis** of my research could be only **partially verified**, as the positive impacts of the EU-accession on the Hungarian agricultural farms are not evident, the expectations before the accession were too excessive. The support policy of the CAP could **slightly improve the financial situation of the agricultural enterprises,** but it was not enough to increase competitiveness and efficiency. In case of small farms, this help was enough to maintain their operation and production, but it was not enough to improve their production. This situation will conserve the present, disadvantageous farm structure. The information level of Hungarian agricultural farms could have not improved since the date of accession.

The **H2 hypothesis** of my thesis failed, because – according to my international examinations – the **closing up of the Hungarian farms towards the former EU member states could not start** in profit production, moreover, **Hungary lost its former advantages** in comparison with the other V4 countries.

My **H3 hypothesis could be partially verified**, because the EU-accession had different impacts on the financial situation of different agricultural enterprises. According to my examinations taken by the Hungarian FADN database, the winners and losers of the accession may be separated. The most successful farms were field crop producers, and by the indicators of profitability; in case of other farm types stagnation or decrease was typical.

My **H4 hypothesis was verified**, as I could demonstrate by the examination of the values of ROE and making a rank according to quartile groups, that the impacts of the EU-accession may be distinguished according to farm sizes and farm types.

My **H5** hypothesis could be **partially verified**. Despite the increased income level caused by the different supports, small farms could not start intensive investments, while the volume of investments in large farms could not reach the level of the other V4 countries.

As a result of my examinations carried out on the database of the international and Hungarian FADN system (years between 2002 and 2009) the winners and losers of the accession could be determined, both by farm sizes and by types of farming.

The profitability indicators of small farms slightly increased after the accession, as a result of the increased income level caused by the different EU payments, but it was not enough to improve their competitiveness. My results confirmed, that the information level of the small sized farms is not appropriate, therefore, and as a result of their financial problems they

cannot or do not dare to make intensive investments. Large farms, because of their better bargaining power, higher information level and better creditability, could better take the advantages of investment supports after the EU accession, which relatively improved their competitiveness.

The **proposal for the new reform of the CAP** may help to solve the **problems of the small farms** by its easier administration and the introduction of small farmers' scheme, but for the **large farms,** the planned **payments ceiling** may cause financial problems.

The new **reform of the CAP may give such a new opportunity for the Hungarian farms**, which we lost in 2004 by the unsuccessful preparation for the accession. The development of the **Hungarian agricultural strategy in compliance with the new CAP reform objectives** shall not be postponed longer. In my opinion, the most important task is to find the balance between the more competitive large farms and the small farms, which play an important role in the production of **European public goods** (e.g. environment and landscape protection, rural heritage etc.) in such way, that only the really **active farmers** could use the supports. This objective may be solved by the definition of active farmers, proposed by the new CAP reform. The other way to solve the problems of the small farms is to form well-functioning and sustainable **integrations** of the producers, mainly in the field of food procession and sales.

Large farms, of course, also need the EU supports, as the efficient and competitive production is depending significantly on the economic size of production. It is obvious, that **large farms** will not play important role in the protection of cultural heritage and landscape protection, but this is not their task. Their **main function is agricultural production and the supply with high quality food products**; from the other functions of agriculture, they play role in environmental aspects and in providing reasonable wages for the rural population.

In my opinion, objectives of small and large farms should be separated when establishing the agricultural strategy, as both of them play important role in the Hungarian agriculture. **Large farms may provide the national economy by quality products in compliance with the requirements of the market, while small farms put the social and environmental factors in the middle, thus, they will complement each other**.

In the Hungarian agriculture, one of the most important objectives is to **improve the information level** of the agricultural enterprises, as it may reduce the lagging of smaller farms. According to the former experiences, the small farms could not take the advantages the EU-accession, therefore the convergence process delayed. The **new reform of the CAP may give a new opportunity for the Hungarian agricultural enterprises** to help their closing up process and the stabilization of their economic status. The preparations for the introduction of the new system may be successful by a **well-developed information strategy**.

6. Related publications

Articles in scientific periodicals:

In foreign language:

1. Székely Cs. – Szakál F. – **Dunay A.** (2001): European Integration – A New Challenge for Hungarian Agriculture. Gazdálkodás, 2001. 3. sz. különkiadás. p. 1-12. (ISSN 0046-5518)
2. Mészáros K. – **Dunay A.** – Illés B. Cs. (2011): The factors of competitiveness of Hungarian beef cattle sector. Agrár- és Vidékfejlesztési Szemle, Vol. 6, No. 1, Conference CD supplement, p. 61-65. (ISSN 1788-5345)
3. Törő-Dunay, A. (2011): Development of Rural Areas through CAP 2020 and Europe 2020 Strategy. Scientific Journal of Warsaw University of Life Sciences – SGGW – Problems of World Agriculture, Volume 11 (XXVI) 2011. Number 3., p. 161-169. (ISSN 2081-6960)
4. **Dunay Anna** (2011): Rural Development Policy and its Future in Europe 2020 Strategy. Regional and Business Studies (2011) Vol 3. Suppl. 1., p. 325-332. (ISSN 2061-2311)

In Hungarian:

1. Székely Cs. – Szakál F. – **Törőné Dunay A.** (2001): Az EU csatlakozás: új kihívás a mezőgazdaságban. Gazdálkodás, XLV. évf. 6. szám. p. 1-13. (ISSN 0046-5518)
2. Székely Cs. – **Dunay A.** (2002): Az EU csatlakozás várható hatásai a magyar mezőgazdasági vállalkozásokra. Gazdálkodás, XLVI. évf. 6. szám. p. 1-12. (ISSN 0046-5518)
3. **Dunay A.** - Fodor Z. - Illés B. Cs. (2011): Kis- és középvállalkozások e-banking szokásai. Gazdaság & Társadalom, 3. évf., Március, Különszám, p. 103-116. (ISSN 0865-7823)

Academic book, book chapter:

In foreign language:

1. Illés, B. Cs. – **Dunay A.** – Fodor Z. (2011): The Role of E-banking in the Value of Intellectual Capital. p. 221-228. (In: Bylok, F., Cichoblazinski, L. (ed.): People and the value of an organization, Monograph, Częstochowa, Poland, p. 335) (ISBN 978-83-61118-39-8, ISSN 1428-1600)
2. Pataki, L. – Kovács A. – **Dunay A.** – Tatár E. (2011): Outsourcing as a management tool in Hungarian health care services. p. 124-132. (In: Bylok, F., Cichoblazinski, L. (ed.): The role of human capital in knowledge based management, Monograph, Częstochowa, Poland, p. 226) (ISBN 978-83-61118-35-0, ISSN 1428-1600)
3. Illés, Cs. B. – Hustiné Béres, K. – **Dunay, A.** – Pataki, L. (2011): Impacts of Taxation on Small and Medium Enterprises in Central Eastern Europe. p. 77-91. (In: Kondellas, B. (ed.): Business in Central and Eastern Europe: Cross-Atlantic Perspectives. Northeastern Illinois University, Chicago, USA, p. 299) (ISBN 978-0-9846345-0-7)

Presentation or paper published in scientific conference proceedings:

In foreign language:

1. **Dunay, A.** (2002): EU Accession – Opportunities and Threats of the Hungarian Agriculture. MendelNet 2002/3, Brno, I. díl. p. 51-55. (ISBN 80-7302-046-7)

2. Vágány, J. – **Dunay, A.** – Székely, Cs. – Pető, I. (2003): Development and Introduction of HACCP System in Józsefmajor Experimental and Demonstration Farm, a Dairy Farm for Fresh Milk Production, "Large Farm Management" Workshop, IAMO Tage, Halle, 2003. (CD: /Papers/Dunay, Peto.pdf) p. 15; ISBN 3-9809270-0-8
3. **Dunay, A.** (2003): The Hungarian Agriculture Before EU Accession. Agrarian Prospects XII. New Economics and EU Enlargement International Scientific Conference, Prague, II.díl. p. 728-733. (ISBN 80-213-1056-1)
4. Vágány J., **Dunay A.** (2004): Food quality and food safety on Hungarian dairy farms. Food Safety in a Dynamic World, EAAE Seminar, Zeist, Hollandia, p. 10, CD, E:\doc\sessie II - nr 5 - dunay.pdf
5. **Törőné Dunay, A.**: Introduction of Single Area Payment Scheme (SAPS) in Hungary. In: Regions - Countryside - Environment 2004. Nitra, Szlovákia, 2004.11. Nitra: p. 50-55. (ISBN 80-8069-438-9)
6. **Dunay, A.** (2006): The Outlook of the Hungarian Livestock Sectors after the EU Accession. The 7th International Conference of PhD Students, Jihoceská Univerzita, Zemedelská Fakulta, Ceske Budejovice, p. 81-85. (ISBN 80-7040-847-2)
7. **Dunay, A.** – Vágány, J. (2006): HACCP system in Józsefmajor Experimental and Demonstration Farm, a dairy farm for fresh milk production. In: MendelNet 2006, Brno, E:/management/recenzovane/dunay_anna,vagany_judit.doc (ISBN 80-6851-62-1)
8. Bellász Zs., – **Dunay A**. (2007): The Role of Regional and Settlement Marketing in Hungary "Tradíció és Innováció" Nemzetközi Tudományos Konferencia, Szent István Egyetem GTK, Gödöllő, (ISBN 978-963-9483-85-9)
9. Bellász Zs – **Dunay A.** – Török G. – Rudnák I. – Pahunova R. N. – Zaharcsenko A. A. – Ruban M.Sz. (2007): Ekonomika razvityija regionov i gorodov Vengrija. (Az Orosz Föderáció non-profit szektorral foglalkozó felsőoktatási intézményeinek nemzetközi tudományos konferenciája.) Moszkva, Oroszország, 2007.04., p. 11-16. (ISBN 978-9675-0161-6)
10. **Törő-Dunay, A.** – K. Takács-György (2010): Experiences of the introduction of New Hungary Rural Development Programme in the Southern Transdanubia Region. „Rural Development and Structural Changes of Agricultural Companies in Agrocomplex" Medzinárodná vedecká konferencia. Slovenská poľnohospodárska univerzita v Nitre, Rackova Dolina, Slovensko, Konferencia CD/pdf/dunay_takacs, p. 273-278. (ISBN 978-80-552-0367-6)
11. Takács-György K., **Törő-Dunay A.**, Takács I. (2011): 2007-2013: Experiences of the introduction of New Hungary Rural Development Programme. Proceedings of International Conference – „Development Prospects of Rural Areas Lagging Behind in the CEE Region." Gödöllő, Hungary, p. 138-144. (ISBN 978-963-269-234-0)
12. **Dunay Anna** (2011): Rural Development Policy and its Future in Europe: 2020 Strategy. Abstract of 3rd International Conference of Economic Sciences, Kaposvár, Hungary, p. 81. (ISBN 978-963-9821-31-6), Conference CD p. 8 (ISBN 978-963-9821-42-2)
13. Illés, B. Cs. – Hustiné Béres, K. – **Dunay, A**. – Pataki, L. (2011): Impacts of tax systems on the competiveness of small and medium enterprises in CEE countries. Conference Proceedings of 9th Annual Conference on Marketing and Business Strategies for Central & Eastern Europe Vienna, Austria, p. 145-156. (ISBN 978-3-9503290-0-1)

In Hungarian:

1. Székely Cs. – **Dunay A.** – Kovács A. (1998): Az EU csatlakozás várható gazdasági hatásai a magyar mezőgazdasági vállalkozásokra. VI. Nemzetközi Agrárökonómiai Tudomá-

nyos Napok, Gyöngyös, III. kötet p. 148-153. (ISBN 963 8140 74 7)

2. **Törőné Dunay A.** (2003): A magyar mezőgazdasági vállalkozások lehetőségei az EU csatlakozás után. Gazdálkodók esélyei az Európai Unióban c. konferencia, Mosonmagyaróvár, CD Kiadvány, E:\2\TöronéDunayAnna.pdf, p. 12
3. Vágány J. – **Dunay A.** (2003): Az élelmiszer-biztonsági rendszer gazdasági hatékonyságának vizsgálata a Józsefmajori Kísérleti és Tangazdaság tehenészetében. EU Konform mezőgazdaság és élelmiszerbiztonság. Nemzetközi Tudományos Konferencia, Gödöllő, I. kötet p. 446-450. (ISBN 963 9483 29 X)
4. **Törőné Dunay A.** (2003): A szarvasmarha ágazat szabályozása az EU-csatlakozás után. II. Erdei Ferenc Tudományos Konferencia, Kecskemét, II. kötet p. 198-202. (ISBN 963 7294 46 Ö; ISBN 963 7294 48 1)
5. **Törőné Dunay A.** (2003): A magyar mezőgazdasági vállalkozások támogatási lehetőségei az EU-csatlakozás után. II. Erdei Ferenc Tudományos Konferencia, Kecskemét, II. kötet p. 146-150. (ISBN 963 7294 46 Ö; ISBN 963 7294 48 1)
6. **Törőné Dunay A.** (2004): Magyar mezőgazdasági vállalkozások ökonómiai vizsgálata a támogatási rendszer változása tükrében. WEU Conference, Mosonmagyaróvár, E:\sec3\06_torone.pdf (ISBN 963 9364 40 1)
7. **Törőné Dunay A.**, Vágány J. (2004): Egy tejtermelő gazdaság vizsgálata az EU csatlakozás tükrében. WEU Conference, Mosonmagyaróvár, E:\sec9\28_torone_vagany.pdf (ISBN 963 9364 40 1)
8. Vágány J., **Törőné Dunay A.** (2004): Élelmiszerminőség- és biztonság a tejgazdaságban, In: IX. Nemzetközi Agrárökonómiai Tudományos Napok, Gyöngyös, CD, p. 10, E:\11.Élelmiszerfeldolgozás\6\VágányJudit-TörőnéDunayAnna.doc (ISBN 963 214 313 2)
9. **Törőné Dunay A.** (2005): Csatlakozás után egy évvel – Változások a támogatási rendszerben. „Verseny élesben" Európa-napi Konferencia, Mosonmagyaróvár, E:\Európai Unió és Versenyképesség Szekció\Törőné Dunay Anna.pdf
10. **Dunay A.** (2006): A támogatási rendszer változásai: áttérés a SAPS rendszerről az SPS rendszerre. Within the European Union III. Nemzetközi Konferencia, Mosonmagyaróvár, (ISBN 963 9364 67 3)
11. **Dunay A.** (2008): A halászati ágazat jelentőségének növelése a 2007-2013. közötti időszakban "Vállalati növekedés - változó menedzsment/marketing konferencia" Tudományos Konferencia, Széchenyi István Egyetem, Győr, (ISBN 978-963-7175-48-0)
12. Bellász Zs., **Dunay A.**, Török L. G. (2008): A régió- és településmarketing hazai alkalmazása. "Vállalati növekedés - változó menedzsment/marketing konferencia" Tudományos Konferencia, Széchenyi István Egyetem, Győr, (ISBN 978-963-7175-48-0)
13. Illés B. Csaba - Fodor Zita - **Dunay Anna** (2010): Kis- és középvállalkozások e-banking szokásai. Hitel, Világ, Stádium Nemzetközi Tudományos Konferencia, Programfüzet és előadáskivonatok, Sopron, p. 99., CD, (ISBN 978-963-9883-73-4)

<u>University textbook</u>:

1. Székely Cs. – **Dunay A.** (2003): EU Agrármenedzsment. Egyetemi jegyzet, SZIE Gazdaság- és Társadalomtudományi Kar, Gödöllő, p. 79

Scientific report:

1. **Dunay A.** (résztvevő) (1998): Country Report – Evaluation of Farm Level Impacts of Agricultural Policy Developments in the Process of Further EU Integration in Selected Visegrad and EU Countries. PHARE ACE (P 95-2180-R) project, 1995-1998