Sustainability of Small and Family Farms (SOILS)

Udržateľnosť malých a rodinných fariem

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ANALYSIS OF SMALL FARMS

IN THE CENTRAL EUROPEAN SPACE

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Abstract

The target group of a methodical tool are students and farmers. Case Countries: Czech Republic, Hungary, Slovakia and Lithuania.

The general aim of study book is help to understand the role of small and family farms aiming to gain sustainability in rural development, to let students and farmers give their own opinion and to evaluate the existing agriculture marketing environent and to create the strategies aiming to gain sustainability.

A case study was used to analyse the countries, which participated in the SOILS project (Lithuania, the Czech Republic, Hungary and Slovakia). This method had important advantages as it allowed to better see the specificities of those countries in certain areas. Since the project focused on characterising the situation in agriculture and rural areas, it was appropriate to collect and compare information related to agriculture and rural areas in several categories. It should be noted that the identified comparative indicator groups reflect, to a certain extent, the dimensions of sustainable development, although the indicators that were chosen and compared were those that are available in all selected countries, even though the provision of information by year sometimes differs (that demonstrated the specificities of information provision and availability in individual countries, which led to difficulties in indicator comparison).

This edition divided into 6 parts. In the first part "Marketing environment of agriculture in Slovakia, Czech Republic, Lithuania, Hungary" was made analyzis of broad marketing environment of the Selected EU Member states, identified country profiles and made analyses of agriculture marketing environment in the Central Europe. In the second part „The key territorial characteristics of Slovakia, Czech Republic, Lithuania and Hungary rural areas " authors present the comparison analyses of the selected countries rural areas, describe the stages of development of agriculture and creation of conditions for its development in Slovakia, Czech Republic, Lithuania, Hungary. In the third and fourth part authors present the comparison analyses of structure of the farms and agricultural production in Slovakia, Czech Republic, Lithuania, Hungary. The fifth part "Support mechanisms within the main commodities of plant and livestock production in Slovakia, Czech Republic, Lithuania, Hungary" is divided into three subchapters. Authors present the public support for European **a**griculture and selected countries priorities, analyses of financial support in selected countries and same insights of influence of political-legal factors on the family farms. In the sixth part, authors present good practice examples of family farms sustainable development.

CONTENT

INTRODUCTION

Agriculture as a purposeful use of nature is unquestionably one of the first creative activities of the population of our planet since the beginning of human history. It was a vital impulse for development, a logical result of the quest for new ways to obtain more or less available resources for subsistence as the basic prerequisite of human existence itself. First successes in development of agriculture and its effects are essentially related to the basis of creating and increasing wealth in society and thus creating conditions for emergence and development of other sectors of industry and trade in all the world's regions[1]. Process of intensification of European agriculture has been significantly influenced by development of socio-economic conditions in European countries, especially the impact of revolutionary transformations and events of the war on the socio-economic environment of agriculture. Development of the agro-food market after the World War II, the emergence and evolution of the Common Agricultural Policy including its reforms towards the end of the twentieth century was therefore significant in terms of projections and actual conditions of development of rural Europe at the turn of the millennium. Specifically for the agriculture in the Central and Eastern Europe the approaches to the transformation of agriculture and conditions shaped by economic reform after 1989 which preceded the accession of new member states to the European Union need to be taken into account.

The political, economic and social transformations that have taken place in the Central- and Eastern-European countries in the 1990s have also resulted in important changes in the Hungarian, Lithuanian, Slovakian and Czech Republic agricultural economy: the structure of land use and land ownership has changed, the cooperative farms have been broken up and their place has been taken by the private economic organisations and individual farms.

Across all levels of development, family farms are the dominant type of firm in agriculture. For many crops, farming over a large area requires hired labour, and hired labour requires supervision. For a family that runs a farm, supervision costs can be high relative to the benefits of operating at a greater scale. This makes the small family farm optimal as a firm (FAO, 2017)[2].

[1] Bečvářová, V., Zdráhal, I. (2013). Agriculture And Rural Development In The European Model Of Agricultural Policy. Shaping Strategy In The Context Of Changes. Mendel Universiti in Brno.

[2] A data portrait of smallholder farmers. FAO

The concept of the "small farm" itself is fuzzy and varies according to the country, depending on the economic, social and political context, and the range of farm sizes (Lund, 2009)[3]. Defining small farms includes using criteria such as farm size, standard gross margin – expressed in Economic Development Unit (EDU) - or turnover. The notion of a 'smallholding' varies over time and is specific to a unique context. Whereas in France, a 25-30 ha farm is considered 'small', the same farm would be considered 'medium-sized' in Portugal or Italy. Family farm enterprises emerged in the transition to capitalism following the reprivatization and decollectivization of agriculture in Hungary (Ildikó Asztalos Morell, 2014)

Whereas in many countries, family farming is a byword for small farms, the situation in Europe is more complex. 97% of holdings are owned by one single person and could be considered family farms despite some of them being very large in size[4]. This plurality of meanings are why same organisations prefer not to use this term. Instead we speak about small-scale farming or " peasant farming" in many countries.

The concept of 'sustainability' appeared in the early 1990s, with three dimensions to it: economic – social – environmental. It shed a new light on small-scale farming and the peasantry, which allows us to offer the definition of « peasants », "peasants are men and women, including the landless, who have a direct relation with land and nature through the production of food and agricultural products by working the land[5] ".

Sustainable agriculture is a holistic approach to farming, and is an integral part of pest management, cultural practices, soil health, and long-term farm viability. Sustainable agriculture is an integrated system of plant and animal production practices having a site-specific application that will, over the long term: satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; enhance the quality of life for farmers and society as a whole[6]. The society need sustainable agriculture because more people will need more food in the future, farming is a key source of income that can help make poverty history, agriculture has a dual

[3] Lund P. J., 2009. *What do we mean by a 'small farm'*?. 111th EAAE-IAAE Seminar 'Small Farms: decline or persistence', University of Kent, Canterbury, UK, 26th-27th June 2009, 9.

[4] Structures and dynamics of EU farms : changes, trends and policy relevance – EU agricultural economics briefs n°9 october 2013 – European Commission

[5] "Successful stories from the Peasant Family Farming (PFF)" (IPC – Report to FAO, Rome – 2014)

[6] What is sustainable agriculture? Northeast SARE https://www.northeastsare.org/About-Us/What-is-sustainable-agriculture

role in adapting and mitigating climate change and agriculture uses natural resources that are becoming scarce.

The European Union is moving towards sustainable agriculture. This has a pivotal place in both internal and external policies [7].

Small Farms Can (Sustainably) Feed The Future. Sustainable farming is not strictly defined as organic, and sustainable farms in the developed countries often use chemicals and techniques not permitted on certified organic farms. But these farms are a vast improvement on the highly chemicalized, mechanized, specialized, industrialized factory farms they're replacing. And the more sustainable they become, the more organic they are[8]. Sustainable agricultural production in developing countries means adopting more productive methods that are ecologically efficient, using inputs such as water, land, plant protection chemicals and fertilizers sparingly and effectively[9].

Small-scale family farms are the backbone of food production worldwide. Together, they are the main or sole providers of diverse and nutritious food for 70% of the world's population[10]. European small-scale farmer organisation European Coordination Via Campesina (ECVC) identified 6 good reasons to protect small farms: small farms create employment; small farms allow young people to settle; small farms contribute to food security; small farms have great capacity for innovation; small farms favour biodiversity; small farms are a richness for European culture [11].

Every agriculture farm as business, no matter how big or small, operates within the marketing environment. Its present and future existence, profits, image and positioning depend on its internal and external environment. The agriculture environment is one of the most dynamic aspects of the business. In order to operate and stay in the market for long, one has to understand and analyze the marketing environment and its components properly[12].

The target group of a methodical tool are students and farmers. Case Countries: Czech Republic, Hungary, Slovakia and Lithuania.

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[7] Sustainable agriculture for the future we want. European Union, 2012 European Commission. https://ec.europa.eu/agriculture/sites/agriculture/files/events/2012/rio-side-event/brochure_en.pdf

[8] Addison, K. Handmade Projects Journey to Forever. http://journeytoforever.org/farm.html

[9] Sustainable agriculture for the future we want. European Union, 2012 European Commission. https://ec.europa.eu/agriculture/sites/agriculture/files/events/2012/rio-side-event/brochure_en.pdf

[10] ETCC Group (2017). *Who will feed us? The Industrial food chain vs the peasant food web*. Val David: ETC Group.

[11] How can public policy support small-scale family farms? 2015. European Coordination Via Campesina – ECVC. Bruxelles.

[12] Pawha Aashish 2018. Marketing Environment: Explanation, Components, & Importance https://www.feedough.com/marketing-environment/

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In the second part „The key territorial characteristics of Slovakia, Czech Republic, Lithuania and Hungary rural areas " authors present the comparison analyses of the selected countries rural areas, describe the stages of development of agriculture and creation of conditions for its development in Slovakia, Czech Republic, Lithuania, Hungary.

In the third part „ Structure of the farms in Slovakia, Czech Republic, Lithuania, Hungary" and fourth "Agricultural production in Slovakia, Czech Republic, Lithuania, Hungary" authors present the comparison analyses Structure of the farms and agricultural production.

The fifth part "Support mechanisms within the main commodities of plant and livestock production in Slovakia, Czech Republic, Lithuania, Hungary" is divided into three subchapters. Authors present the public support for European **a**griculture and selected countries priorities, analyses of financial support in selected countries and same insights of influence of political-legal factors on the family farms.

In the sixth part, authors present good practice examples of small farms sustainable development in Slovakia, Czech Republic, Lithuania, Hungary.

The authors of the monography are grateful to the Erasmus + Programme of the European Union.

1 MARKETING ENVIRONMENT OF AGRICULTURE IN SLOVAKIA, CZECH REPUBLIC, LITHUANIA, HUNGARY

1.1 Theoretical fundamentals of agricultural marketing environment

Marketing Environment is the combination of external and internal factors and forces which affect the farmer's (company's) ability to establish a relationship and serve its customers. The marketing environment can be broadly classified into three parts (Fig.1). The marketing environment of a business consists of an internal and an external environment. The internal environment is company specific and includes owners, workers, machines, materials etc. The external environment is further divided into two components: micro & macro. The micro or the task environment is also specific to the business but external. It consists of factors engaged in producing, distributing, and promoting the offering. The macro or the broad environment includes larger societal forces which affect society as a whole. The broad environment is made up of 6 components: demographic, economic, physical, technological, political-legal, and social-cultural environment.[13]

Some of environment factors are controllable while some are uncontrollable and require business operations to change accordingly. Farmers must be well aware of its marketing environment in which it is operating to overcome the negative impact the environment factors are imposing on farm's marketing activities.

[13] Pawha Aashish 2018. Marketing Environment: Explanation, Components, & Importance https://www.feedough.com/marketing-environment/

Figure 1. Classification of marketing environment

At the European level, there has never been a common understanding of "small farms". The accession of the Eastern European agricultural countries in the period 2004-2007 doubled the number of small farms in the EU, thus adding to the heterogeneity that characterizes the farming sector in Europe, making it even harder to adopt a common definition. This wide variation in farm structures and the lack of consistent data for all Member States are adduced as the main reason why a commonly agreed definition does not exis [14].

Small farms are by no means outdated. They can be economically viable and their persistence is highly desirable, as they provide a number of benefits to both their local communities and society as a whole, ranging from biodiversity protection to the provision of rural income opportunities and the enhancement of rural community life. Rather than being a thing of the past, they have great potential when it comes to innovative ideas such as circular economies. Farmers' and civil society's innovations are already defending small farms and reinventing their realities. But they also need more and better public support [15], methodological recommendations, market research data and examples of good practice.

Small farms we can indentified according

[14] European Commission. Agriculture and Rural Development. EU Agricultural Economic brief. What is a small farm? Brief n.2, July 2011.

[15] Small Farms in Europe: Viable but Underestimated. 2017. By Meike Fienitz, Eco Ruralis.

- *the structural conditions* e.g. farm size (land area, labour units, production size, economic size, etc.);
- *non structural conditions* e.g. risk of poverty, lack of opportunity, more autonomy.

Family farms we can indentified according:

- Social relations e.g. family and relatives;
- Farm succcession e.g. generational transfer.

The Nyéléni Europe (2019)[16] and others networks call for a transition towards a food system that provides healthy, nutritious, affordable, and locally distributed food for consumers, nourishes soils and biodiverse ecosystems, protects the climate, provides fair prices as well as safe and dignified employment, and promotes social cohesion in rural areas (Fig.1).

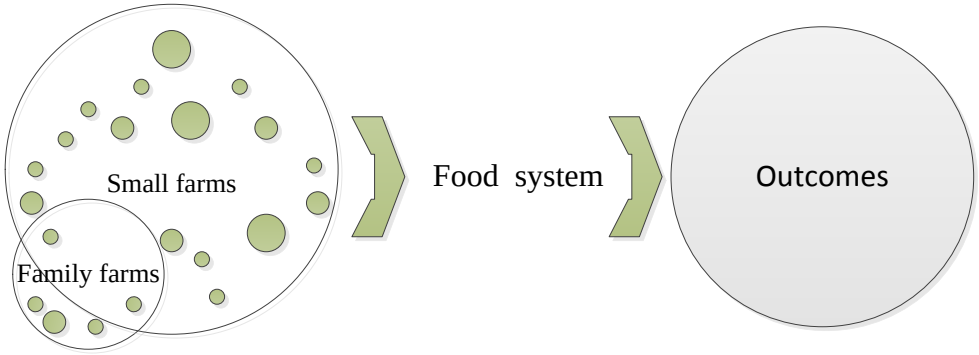


Figure 2. Small and family farms as part of the food system[17]

For this transition to be successful, we must place small-scale sustainable producers at the centre, and provide them with the political, economic and social support they need to strive for food sovereignty.

Small farms contribute to a resilient, healthy and balanced regional development. A small farm can thus be seen as a complex and multifunctional entity, which engages in sustainability in its broadest sense – economic, social and environmental [18].

[16] More farmers, better food. Why and how to put small-scale sustainable producers at the core of the new CAP// *Writen by* Chris Chancellor - independent researcher and writer on land rights and sustainable food systems, Nyéléni, Europe & Centralasia, March, 2019.

[17]Conceptual framework, SALSA, http://www.salsa.uevora.pt/en/conceptual-framework/

[18] Small Farms in Europe: Time for a Re-Definition. By Anna Gioia, Eco Ruralis, April 2017, https://www.accesstoland.eu/IMG/pdf/comparative_analysis_of_small_farms_in_europe.pdf

The Sustainable Development Goals are the world's work agenda which aims to end poverty, protect the planet and ensure prosperity for all within 2030. All of the 17 goals are mutually dependent on each other and built on the principle of sustainable development[19]. Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" **(**World Commission on Environment and Development, 1987)[20]. The concept covers a broad scope of matters such as environmental, social, and economic development which continues to prove its importance in our lives as it affects all aspects of them (Fig.3).

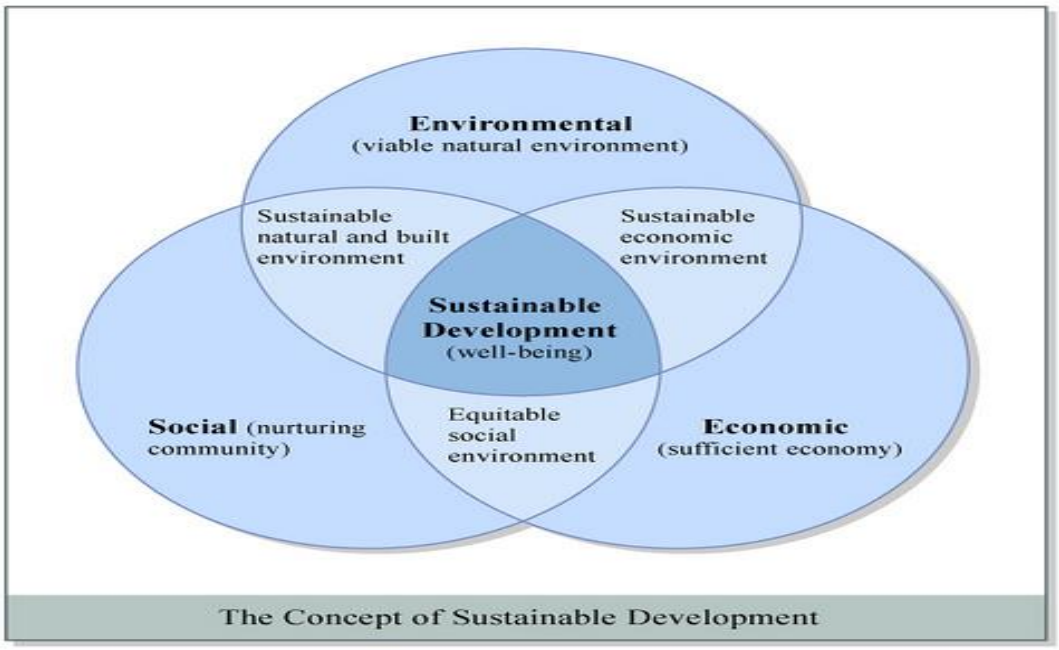


Figure 3. The Concept of Sustainable Development

The United Nations have set out a number of Sustainable Development Goals and targets to serve as guidelines for the future and optimal conscious development.

[19] Learning Resources About Sustainable Development And The Sustainable Development Goals. FN_SAMBANDET, Unitied Nations Associatio of Norway file:///C:/Users/Vartotojas/Downloads/Learning%20Resources_without%20animation%20movies.pdf

[20] Our Common Future. 1987. Report of the World Commission on Environment and Development https://www.are.admin.ch/are/en/home/sustainable-development/international-cooperation/2030agenda/un-_-milestones-in-sustainable-development/1987--brundtland-report.html, UN Documents: Gathering a Body of Global Agreements has been compiled by the NGO Committee on Education of the Conference of NGOs from United Nations web sites with the invaluable help of information & communications technology.

The book will focus on external marketing environment and macro indicators. The internal environment, factors that can be controlled by the farmers, will be reflected in good practices examples.

1.2 The broad marketing environment of the Selected EU Member states

1.2.1. Slovakia country profile

Right at the heart of Europe and with a history intertwined with that of its neighbours, Slovakia has proudly preserved its own language and distinct cultural traditions.

It was part of Czechoslovakia until the "velvet divorce" in January 1993.

Having uncoupled itself from its western neighbour, Slovakia at first struggled to prove itself as an independent democracy, but by the time of the twentieth anniversary of the "velvet divorce" in January 2013, it had come to be seen as one of Europe's biggest success stories.

Slovakia joined the EU in 2004 and the eurozone in 2009. Its forces have taken part in the Nato-led operation in Afghanistan, and in peacekeeping duties in Kosovo.

Slovakia has a significant Romany population which suffers disproportionately high levels of poverty and social deprivation.

Main facts of the country

Capital: Bratislava	
Population 5.5 million	
Area 49,033 sq km (18,932 sq miles)	
Major language Slovak	
Major religion Christianity	
Life expectancy 74 years (men), 81 years (women)	
Currency EURO	

Source: https://www.bbc.co.uk/news/world-europe-17847682

Some key dates in the history of Slovakia:

1918-1992 - Republic of Czechoslovakia includes Czech, Slovak and Ruthenian lands. The "velvet divorce" results in two independent countries, the Czech Republic and Slovakia.

2004 - Slovakia joins Nato and European Union.

2009 - Slovakia adopts the euro.[21]

1.2.2. Czech Republic country profile

Part of Czechoslovakia until the "velvet divorce" in January 1993, the Czech Republic has a robust democratic tradition, a highly-developed economy, and a rich cultural heritage.

It emerged from over 40 years of Communist rule in 1990, and was the first former Eastern Bloc state to acquire the status of a developed economy. It joined the European Union in 2004. Communist rule had lasted since 1948, when the restored pre-war democratic system was overthrown in a Soviet-backed coup. The "Prague Spring" of 1968, when Communist leader Alexander Dubcek tried to bring in liberal reforms, was crushed by Warsaw Pact tanks.

In 1989, as the curtain was coming down on communism in the Kremlin, the dissident playwright Vaclav Havel emerged as the figurehead of the country's "velvet revolution" and became the first president of post-communist Czechoslovakia.

Main facts of the country

Capital: Prague	
Population 10.6 million	
Area 78,866 sq km (30,450 sq miles)	
Major language Czech	
Major religion Christianity	
Life expectancy 76 years (men), 83 years (women)	
Currency koruna	

Source: https://www.bbc.co.uk/news/world-europe-17220018

[21] Source: https://www.bbc.co.uk/news/world-europe-17847682

Some key dates in Czech and Czechoslovak history:

1918 - Republic of Czechoslovakia proclaimed. Tomas Masaryk elected president.

1935 - Masaryk succeeded as president by Edvard Benes.

1939 - Nazi invasion of Czech Lands which become a German protectorate. Slovakia is proclaimed an independent state under profascist leader Jozef Tiso.

1940 - Benes establishes government in exile in London.

1945 - Soviet troops enter Prague. Benes returns and issues decrees which lay the foundation for the expulsion of over two and a half million Sudeten Germans and more than half a million ethnic Hungarians.

1946 - Czechoslovak Communist Party (CPCz) leader Klement Gottwald becomes prime minister in power-sharing government following national elections.

1968 - 'Prague Spring' under reform-minded leader Alexandr Dubcek is crushed when Soviet-led Warsaw Pact troops invade.

1969 - Gustav Husak replaces Dubcek as Communist Party leader.

1975 - Husak becomes president.

1977 - A group of dissidents including playwright Vaclav Havel publish Charter 77 calling for restoration of civil and political rights.

1989 - Massive protests on the streets of Prague force the resignation of the hard-line Communist Party leadership in what is dubbed "the velvet revolution." Federal Assembly abolishes Communists' constitutional hold on power. Vaclav Havel elected president.

1990 - Country renamed Czech and Slovak Federative Republic. First free elections since 1946.

Image copyright Getty Images

Image caption Vaclav Havel with Alexandr Dubcek in Prague in 1990

1991 - Soviet forces complete withdrawal.

1993 - Czechoslovakia completes "velvet divorce" which results in two independent countries, the Czech Republic and Slovakia. Vaclav Havel elected president of the Czech Republic.

1996 - Vaclav Klaus reappointed as prime minister in a minority coalition government following the Czech Republic's first general election since independence.

1998 - Havel re-elected president for a further five years.

1999 - Czech Republic becomes full member of Nato.

2004 - Czech Republic is one of 10 new nations to join the EU.[22]

[22] Source: https://www.bbc.co.uk/news/world-europe-17220018

1.2.3. Lithuania country profile

Lithuania is the largest and most southerly of the three Baltic republics.

Not much more than a decade after it regained its independence during the collapse of the Soviet Union in 1990, Lithuania was welcomed as a Nato member in late March 2004.

The move came just weeks before a second historic shift for the country in establishing its place in the Western family of nations as it joined the EU in May 2004.

Russia's Kaliningrad exclave hosts the headquarters of the Russian Navy's Baltic Fleet, and shares a major border with Lithuania.

Main facts of the country

Capital: Vilnius	
Population 2.8 million	
Area 65,300 sq km (25,212 sq miles)	
Languages Lithuanian (official), Russian, Polish, Belarusian	
Major religion Christianity	
Life expectancy 67 years (men), 78 years (women)	
Currency EURO	

Source: https://www.bbc.co.uk/news/world-europe-17536867

Some key dates in Lithuania's modern history:

1915 - Lithuania, under Russian rule since the late 18th century, is occupied by German troops during the First World War.

1918 - Lithuania declares independence.

1920 - Soviet Russia recognises Lithuania's independence.

1939 - The Soviet Union compels Lithuania to accept Soviet military bases.

1940 - Soviet Army invades. Smetona flees. Lithuania incorporated into Soviet Union.

1941 - Thousands of Lithuanians deported to Siberia. Nazi Germany invades Soviet Union and occupy Lithuania.

Image caption Parade to mark the 25th anniversary of the restoration of independence held in Vilnius in 2015

1944 - Soviet Army returns, presaging further deportations and repression of resistance.

1989 - Parliament approves declaration of Lithuanian sovereignty, stating that Lithuanian laws take precedence over Soviet ones.

1991 - Following failed coup in Moscow the previous month, the Soviet Union recognises Lithuania's independence. Lithuania joins the UN.

1992 - New constitution introduces presidency. The former Communist Party, renamed the Lithuanian Democratic Labour Party, wins more seats than Sajudis in general election. Coalition government formed.

1993 - Lithuania joins Council of Europe. Litas national currency re-introduced. Russian troops complete withdrawal.

2004 - Lithuania is one of 10 new states to join the EU. And Lithuania also joins Nato.

1.2.4. Hungary country profile

Hungary traces its history back to the Magyars, an alliance of semi-nomadic tribes from southern Russia and the Black Sea coast that arrived in the region in the ninth century. After centuries as a powerful medieval kingdom, Hungary was part of the Ottoman and then Habsburg empires from the 16th century onwards, emerging as an independent country again after the First World War.

After decades under Communist rule, Hungary's status as a liberal democracy and member of the European Union has been questioned by the increasingly authoritarian actions of populist right-wing Prime Minister Viktor Orban.

A landlocked country, Hungary is home to Lake Balaton, the largest in central Europe, and to a large number of spa towns and hot springs.

Main facts of the country

Capital: Budapest	
Population 10 million	
Area 93,030 sq km (35,919 sq miles)	
Major language Hungarian	
Major religion Christianity	
Life expectancy 71 years (men), 78 years (women)	
Currency Forint	

Source: https://www.bbc.co.uk/news/world-europe-17380792

Some key dates in Hungary's modern history:

1867 - Hungary becomes equal partner in Austro-Hungarian Empire.

Image copyright Getty Images

Image caption Bridge over the River Danube between Buda and Pest, the western and eastern sides of Budapest

1918 - Austro-Hungarian Empire is broken up at the end of First World War. A Hungarian republic is proclaimed following a revolution.

1919 - Communists take over power under Bela Kun. Kun wages war on Czechoslovakia and Romania. Romanian forces occupy Budapest and hand power to Admiral Miklos Horthy.

1920 - Under the Treaty of Trianon, Entente powers award more than two-thirds of Hungarian territory to Czechoslovakia, Romania and Yugoslavia, leaving a third of Hungarian speakers living outside the country.

1920s-1930s - Admiral Horthy's rule is characterised by bitter resentment at loss of Hungarian territories, becomes progressively more reactionary and more closely allied with Nazi Germany.

1941-1945 - Hungary fights on the side of Nazi Germany in Second World War, losing a large part of its army in Russia. The Germans occupy Hungary in in 1944 after Hungary seeks an armistice. Hundreds of thousands of Jews and gypsies are deported to death camps.

1947-49 - Communists consolidate power under the Soviet occupation, with a new constitution, the nationalisation of industry, collectivised agriculture and mass terror.
1956 - An uprising against Soviet domination suppressed by the Soviet Army. Janos Kadar becomes head of government.
1989-91 - Fall of communism after the opening of the border with Austria to allow thousands of East Germans escape to the West. Democratic elections are held and Soviet forces withdraw from Hungary.
1999 - Hungary joins Nato.
2004 - Hungary is one of 10 new states to join the EU.
2010 - Populist right-wing Prime Minister Viktor Orban consolidates power with increasingly authoritarian measures.[23]

1.3 Agriculture marketing environment in the Central Europe

The 1990s brought very important transformations in the agricultural economy of the post-communist countries of Central Europe. Privatisation, reestablishment of ownership, universal accessibility of production means, as well as a number of other socio-economic processes and phenomena changed the reality, in which agriculture functioned till then. This was the result of the passage of the countries of Central Europe from the centrally managed economy to the market economy, and the preparation, followed by the accession, to the European Union.

The transformations of agriculture had very different character in individual countries, just like the levels of development and the degrees of "socialisation" were different. Yet, the basic economic processes and phenomena of the period of transformation appear to be similar, which is the consequence of the preparation to the accession to the EU according to the same procedures and stipulations. The fundamental purpose of the present paper is to indicate the place of agriculture of the countries of Central Europe in the agricultural economy of the European Union, and to define the directions and effects of the ownership changes, which took place in the farming sector of these countries in the period of economic transformation. The analysis extends over Czechia, Slovakia, Hungary, and Lithuania. All of the countries analysed belonged before 1990 to the Eastern Bloc, in which the same political and economic doc-trine was in force. The effect of the post-war agricultural reforms and of the central steering of agricultural economy before 1990 was nationalisation or "socialisation" of agriculture and marginalisation of significance of private property. After the "iron curtain" fell and the socio-

[23] Source: https://www.bbc.co.uk/news/world-europe-17380792

economic transformations were set in motion, the significance of private property increased again, which entailed a number of other phenomena in agricultural economy. [24]

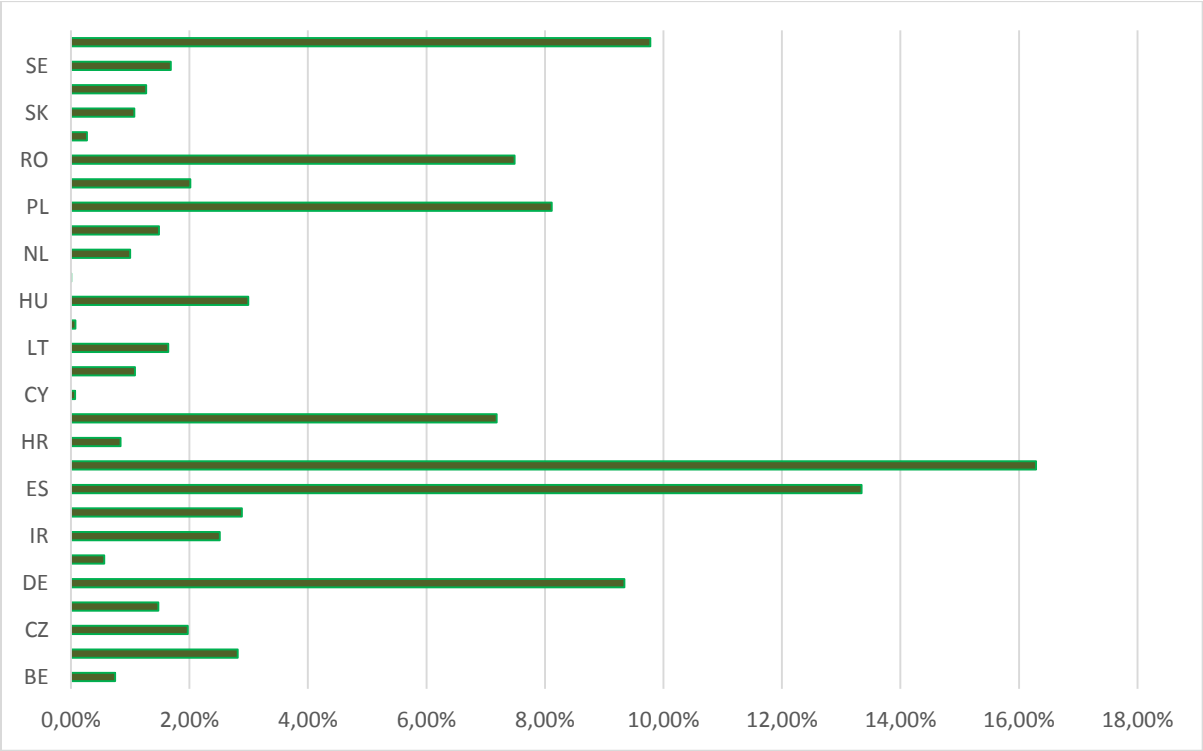
One half of all the land used in agriculture across the EU-28 was farmed in just four Member States: France (16.0 % of the EU-28 total), Spain (13.6 %), the United Kingdom (9.7 %) and Germany (9.6 %). About another one quarter (23.3 %) was farmed in Poland, Romania and Italy, the other 21 Member States farming the other quarter of the EU-28's farmland.

Three fifths (59.7 %) of the farmland in the EU-28 was used as arable land in 2017, a majority being used for cereal production. A further one third (34.0 %) was permanent grassland and meadow. Permanent crops, such as vineyards, olive trees and orchards, accounted for a 6.1 % share and kitchen gardens around 0.2 %.

The majority of farmland was used as arable land in 21 of the EU Member States, this share rising to above 90 % in Denmark and Finland. However, in Austria, Luxembourg, Slovenia, the United Kingdom and Ireland, where there are a high proportion of farms that specialise in grazing livestock, a majority of farmland was permanent pasture and meadow. The proportion of farmland occupied by permanent crops was relatively high in some of the Mediterranean countries, the highest shares (a little over 25 %) being in Cyprus and Greece.

[24] (PDF) AGRICULTURE OF CENTRAL EUROPE IN THE.... Available from: https://www.researchgate.net/publication/237810436_AGRICULTURE_OF_CENTRAL_EUROPE_IN_THE_PERIOD_OF_ECONOMIC_TRANSFORMATION [accessed Jul 17 2018].

Table Utilised agricultural area, 2017 (% share of total utilised agricultural area in the EU-28)



Source: https://ec.europa.eu/eurostat/statistics-explained/index.php/Farms_and_farmland_in_the_European_Union_-_statistics

Very little farmland changes hands in any one year. Ciaian et al. (2012a) report that, amongst the EU-15 MSs, the proportion of Utilised Agricultural Area (UAA) sold each year is under 2 per cent except in the UK, the Netherlands and Finland, where trends have fluctuated around 3 per cent per year. In the NMSs, sales of farmland have been strongly affected by the process of land restitution and privatisation, but have also been generally small as a proportion of total UAA. Moreover, the high prices paid for farmland are frequently well above values suggested by agricultural returns, due to a number of causes, including speculative development potential (e.g. for housing), a wealth protection effect against inflation, illiquidity, purchase transaction costs, policy effects and the generally small area (only a few hectares) of most plots sold. The last is true even in the NMSs, where one might have expected larger areas to be transacted to compensate for lost decades of structural change in family farm sizes and shapes.[25]

[25] Feichtinger, Paul & Salhofer, Klaus, 2011. "The Valuation of Agricultural Land and the Influence of Government Payments," Factor Markets Working Papers 112, Centre for European Policy Studies.

Land may of course be transferred between farms by means other than sale, e.g. by renting it. In principle, this is more flexible over time, and avoids the need for finding considerable financial resources. However, rental markets are subject to some of the same constraints as land sales markets.

There are wide variations in the share of rented land in total UAA (e.g. from 18 % in Ireland to 74 % in France, and from 17 % in Romania to 89 % in Slovakia), as well as in rental levels (which of course also depend on land quality) and in the ratio of land rents to land prices.

Large non-family farms are able to influence land rental prices and rental contract conditions, which distorts the markets for land, particularly of good quality, and may undermine the competitiveness of some FFs. Swinnen and Vranken (2008) found that family farms in the Czech Republic were paying 5 Euro or 15 % higher rents per ha than corporate farms. The situation in Slovakia was similar: family farmers were paying 7 Euro or 45 % more per ha than corporate farms in that country. Transactions of farmland are not usually controlled directly by national governments, but there are often restrictions on foreign ownership, special tax arrangements (especially in times of inflation), and complex legal and agency frameworks.

In addition, national policies often provide legal protection for tenants, and /or restrictions on the level of rent. Both of these may favour existing tenant farmers but tend to narrow the rental market and to raise rents. In recent decades, other forms of farmland tenure have appeared, in addition to simple farmland rental from landowner to tenant , and may involve family farms. These forms vary according to national legislation, e.g. on inheritance and taxation, and may include share farming, contract farming and other forms of joint venture which distribute differently the costs (initial and ongoing), rewards, responsibilities and risks of farming.[26]

According to the EU's labour force survey, agriculture, forestry and fishing employed 11.3 million persons aged over 15 in the EU-28 in 2010 (of which 1.1 million were over the age of 65), the equivalent of 5.2 % of all those employed. The agricultural census estimated that 25.5 million people worked regularly in agriculture, of which 23.5 million people were either the holder or members of the holder's family. After taking into account the amount of time actually worked and converting this into equivalents of full-time work (measured as annual work units), the census estimated that the equivalent of 9.9 million people worked full-time on farms in 2010

[26] Ingram J., Kirwan, J. 2011. Matching new entrants and retiring farmers through farm joint ventures: Insights from the fresh start initiative in Cornwall, UK Land Use Policy, 28 (2011), pp. 917-927

(see Table 9). The agricultural labour force (in full-time labour equivalents) was highest in Poland (19.1 % of the EU-28 total), Romania (16.2 %) and Italy (9.6 %).

Farming was predominantly a family activity in the EU-28; about three quarters (77.8 %) of the labour input in agriculture came from the holder or members of his/her family in 2010. In Malta, Croatia, Ireland and Poland, family labour accounted for over 90 % of the volume of work carried out in agriculture (see Figure 4). By contrast, there was a small number of countries for whom non-family labour accounted for a majority of the labour force in 2010: these included France (56.3 %), Slovakia (71.9 %) and the Czech Republic (77.7 %). Even in some countries where family labour provided a majority of labour, there were relatively large volumes of non-family labour: in particular, non-regular (seasonal) labour (often for picking perishable crops) represented between 10 % and 20 % of the total labour input within agriculture in Cyprus, Germany, France, Italy, the Netherlands, Greece and Spain.

Table Farm labour force, 2016

	Farm labour force, directly employed by the farm on a regular basis	Sole holder directly employed by the farm	Members of sole holders' family, excluding the holder, directly employed by the farm	Non-family farm labour force, directly employed by the farm on a regular basis	Farm labour force, directly employed by the farm on a non-regular basis	Farm managers, excluding group holding
AT	:	56 560	26 720	15 250	3 200	57 210
BE	49 730	23 280	11 640	14 810	5 620	27 660
BG	237 980	107 920	71 130	58 930	11 590	114 710
CY	17 200	7 440	5 810	3 950	1 530	7 960
CZ	98 960	16 930	10 590	71 440	4 300	19 660
DE	450 460	186 150	115 980	148 330	52 150	191 570
DK	47 580	18 220	6 520	22 840	1 900	19 540
EE	19 460	5 090	3 220	11 150	420	7 090
EL	402 840	237 930	140 520	24 390	54 320	250 230
ES	680 090	301 970	189 530	188 590	142 280	377 490
FI	20 130	8 810	5 330	5 990	14 580	9 300
FR	623 230	239 060	49 590	334 590	84 940	338 940
HR	156 630	69 010	73 210	14 410	3 840	72 570
HU	357 230	171 970	88 700	96 560	37 190	180 230
IE	157 490	101 820	45 680	10 000	3 250	102 860
IT	733 830	415 090	207 560	111 180	163 260	425 960
LT	147 160	84 550	34 050	28 560	1 190	85 640
LU	3 340	1 410	930	1 010	160	1 450
LV	75 710	33 380	28 510	13 820	1 150	33 750
MT	5 270	3 220	1 550	500	70	3 440
NL	123 540	44 820	38 390	40 330	23 660	48 360
PL	1 600 320	833 260	657 430	109 640	49 080	856 760
PT	286 730	126 540	103 410	56 780	27 100	136 650

RO	1 539 480	828 220	652 180	59 080	100 640	838 930
SE	28 520	10 380	7 440	10 700	2 470	12 780
SI	78 450	34 660	41 470	2 320	3 940	36 840
SK	45 600	8 880	4 710	32 010	1 590	10 980
UK	145 120	68 730	43 930	32 460	18 350	72 050
EU 28	8 132 080	3 988 740	2 639 010	1 504 370	810 570	4 283 400

Source:https://ec.europa.eu/eurostat/statistics-explained/index.php/Farmers_and_the_agricultural_labour_force_-_statistics

2 THE KEY TERRITORIAL CHARACTERISTICS OF SLOVAKIA, CZECH REPUBLIC, LITHUANIA AND HUNGARY RURAL AREAS

The purpose of the section corresponds to the purpose of the project - is to analyze the vital macroeconomic indicators, such as the share of agriculture in GDP, in total employment, etc.
A case study was used to analyse the countries, which participated in the SOILS project (Lithuania, the Czech Republic, Hungary and Slovakia). This method had important advantages as it allowed to better see the specificities of those countries in certain areas. Since the project focused on characterising the situation in agriculture and rural areas, it was appropriate to collect and compare information related to agriculture and rural areas in several categories. It should be noted that the identified comparative indicator groups reflect, to a certain extent, the dimensions of sustainable development, although the indicators that were chosen and compared were those that are available in all selected countries, even though the provision of information by year sometimes differs (that demonstrated the specificities of information provision and availability in individual countries, which led to difficulties in indicator comparison). To identify and compare the situations in the countries, the indicators were grouped into several categories:

- **spatial type** (mostly focusing on the indicator of how rural areas cover the Lithuanian territory);
- **features of agricultural sector** (focusing on specific agricultural indicators, such as the share of agriculture in the regional economy, the farm structure, the main production outputs);
- **landscape characteristics** (areas covered by different landscape types);
- **population characteristics** (total number, density, rural and urban population, migration, share of rural citizens at risk of poverty or social exclusion, distribution of working population in agriculture by age groups).

2.1 The comparison analyses of the selected countries *by rural area*

The comparison of the selected countries *by rural area* (Table 1) shows that Lithuania hast the largest share of the territory covered by rural areas, whereas the smallest part of the territory covered by rural areas is in Hungary. This indicator in the Czech Republic and Slovakia was pretty much the same. It should be noticed that the percentage of rural areas of the total territory

of a country reflects how much importance is attached to agriculture, which is still dominating in rural areas.

The *characterisation of agricultural sector* in terms of different indicators shows that in 2016 Hungary enjoyed the largest contribution of agriculture to the regional economy, as a share of GDP, while agriculture in the Czech Republic made the lowest contribution; in terms of total employment, the highest levels were found in Lithuania, and the lowest rates (even identical) were in the Czech Republic and Slovakia. In different coutries the farm structure was different. Small farms (<20 ha, in 2013) dominated in all selected countries, while in Hungary they accounted for 94 percent. On the contrary, the numbers of large farms (>50 ha, in 2013) in the analysed countries differed significantly and yet large farms did not dominate in either of the countries (e.g., in Hungary they came up to just 2.9 percent in 2013). The comparison of the main production outputs in the selected countries revealed that crop farming generated larger production volumes than livestock breeding, however, with a view to different production groups in the selected countries the difference was rather significant (e.g., cereals dominated in Hungary, Lithuania and Slovakia, while milk prevailed in the Czech Republic; other outputs were different).

Table 1. The key territorial characteristics of Slovakia, Czech Republic, Lithuania and Hungary rural areas

Country	Spatial type	Agricultural sector	Landscape characteristics	Population
LITHUANIA	Rural area covers (2016) 92,6% (% of land area) of Lithuanian territory	- **% of agriculture in the regional economy** (2016) a) by GDP – 3,28 % b) by total employment (incl. family labour) 8,0 % - **Farm structures** (2013) - <20ha – 87 % - >50ha – 5,7 % - Holder <35 years – 5,6 % - Holder <64 years – 34,0 % - **Main production outputs (**2016**):** Crop output – 1324 mln EUR (62,1 %) Animal output – 808 mln EUR (37,9 %) **Of which mainly:** - Cereals (including seeds) – 47,3 % - Milk – 43,0 % - Industrial crops – 20,5 % - Poultry – 16,4 % - Forage plants – 16,0 %	- Land cover Forest area (2015) – 34,8 (% of land area) Agricultural land (% of land area, 2015) – 47,98% - Agricultural land (2017) – 3421,5 thousand ha, out of which: Arable land 3052,9 thousand ha Orchards 13,8 thousand ha Meadows and pastures 354,8 thousand ha	**Population (2018)** - **total:** 2 879 511 - **density:** 44.05 inhabitants/km^2 - **Rural population (%) (2016): 33,5 %** - **Urban po pulation (% of total population) (2016):** 66,5% **Immigrants/emigrants (2016):** 20,2/50,3 (thousands) - Crude net international migration rate (per 1 000 population): -10,5 **Share of people living in rural areas who are at risk of poverty or social exclusion (2015): 34,7**% **Distribution of working population in agriculture by age groups (2016):** - 15-39 age group – 25,7% - 40-64 age group – 66,5 - 65+ - no data
CZECH REPUBLIC	Rural area covers (2016) 84,3 % (% of land area) of Czech Republic territory	- **% of agriculture in the regional economy** (2016) a) by GDP – 2,46 % b) by total employment (incl. family labour) 2,9 % - **Farm structures** (2013) - <20ha –55 % - >50ha – 27 % - Holder <35 years – 4,6 %	- **Land cover** Forest area (2015) – 34,5 (% of land area) Agricultural land (% of land area, 2015) - 54.56 % - Agricultural land (2015) – out of which	**Population (2018)** - **total:** 10 624 077 - **density:** 134,73 inhabitants/km2 - **Rural population (% of total population) (2016):** 27,02 % - **Urban population (% of total population) (2016):** 72, 98 % **Immigrants/emigrants (2016):** 64,1/ 38,9 (thousands) - Crude net international migration rate

		- Holder <64 years – 23,0 % - **Main production outputs (**2016**):** Crop output – 2762 mln EUR (63,5 %) Animal output – 1588 mln EUR (36,5)% **Of which mainly:** - Milk – 45,5 % - Cereals (including seeds) – 39,0 % - Industrial crops – 28,1 % - Pigs – 19,3 % - Forage plants – 16,4 %	arable land (2015) 3136 thousand ha	(per 1 000 population): 1,9 **Share of people living in rural areas who are at risk of poverty or social exclusion (2015): 12,8** % **Distribution of working population in agriculture by age groups (2016):** - 15-39 age group – 32,7% - 40-64 age group – 63,8% - 65+ - 3,5%
HUNGARY	Rural area covers (2016) 72,2 % (% of land area) of Hungary territory	- **% of agriculture in the regional economy** (2016) a) by GDP – 4,4 % b) by total employment (incl. family labour) 5,0 % - **Farm structures** (2013) - <20ha – 94 % - >50ha – 2,9 % - Holder <35 years – 6,1% - Holder <64 years – 30,3 % - **Main production outputs (**2016**):** - Crop output – 4969 mln EUR (66,4 %) - Animal output – 2412 mln EUR (33,6 %) **Of which mainly:** - Cereals (including seeds) – 45,0 % - Poultry – 33,3 % - Pigs – 26,8 % - Industrial crops – 23,9 % - Milk – 18,6 %	- **Land cover** Forest area (2015) – 22,9 (% of land area) Agricultural land (% of land area, 2015) - 59.06 % Agricultural land – out of which arable land (2015) 4412,2 thousand ha	**Population (2018)** - **total:** 9 695 057 - **density:** 104,15 inhabitants/km^2 - **Rural population (% of total population) (2016):** 28,3 % - **Urban population (% of total population) (2016):** 71,7% **Immigrants/emigrants (2016):** 53,6/ 39,9 (thousands) - Crude net international migration rate (per 1 000 population): -0,1 **Share of people living in rural areas who are at risk of poverty or social exclusion (2015):** 32,5% **Distribution of working population in agriculture by age groups (2016):** - 15-39 age group – 35,0% - 40-64 age group – 62,9% - 65+ - no data
SLOVAKIA	Rural area covers (2016) 83,3 % (% of land area) of	- **% of agriculture in the regional economy** (2016) a) by GDP – 3,68 % b) by total employment (incl. family labour) 2.9 %	- **Land cover** Forest area (2015) – 40,3 (% of land area)	**Population (2018)** - **total:** 5 449 333 - **density:** 111, 14 inhabitants/km^2 - **Rural population (% of total population) (2015):** 46,5 % - **Urban population (% of total population) (2016):** 53,5%

	Slovakia territory	- **Farm structures** (2013)
		  - <20ha – 80 %
		  - >50ha – 13,2 %
		  - Holder <35 years – 8,1 %
		  - Holder <64 years – 21,6 %
		- **Main production outputs (**2016**):**
		- Crop output – 1177 mln EUR (62,3 %)
		- Animal output – 711 mln EUR (37,7 %)
		Of which mainly:
		- Cereals (including seeds) – 48,2 %
		- Milk – 31,2 %
		- Industrial crops – 26,8 %
		- Eggs – 15,4 %
		- Pigs – 15,0 %
			Agricultural land (% of land area, 2014) - 40.02 %
			Agricultural land – out of which arable land (2015) 1382,5 thousand ha
				Immigrants/emigrants (2016): 7,7/ 3,8 (thousands)
				- Crude net international migration rate (per 1 000 population): 0,7
				Share of people living in rural areas who are at risk of poverty or social exclusion (2015): 20,6%
				Distribution of working population in agriculture by age groups (2016):
				- 15-39 age group – 36,0%
				- 40-64 age group – 62,1%
				- 65+ - no data

Source: http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agriculture

Landscape characteristics were compared according to the land cover types. Forest areas varied from 22.9 percent of the land area in Hungary to 40.3 percent of the land area in Slovakia. Agricultural land (the percentage of the land area) in all selected countries accounted for more than 40 percent of the total land area, where arable land (in 2015) represented only 1382.5 thousand ha in Slovakia, while in other selected countries the arable land surface was much larger: over 3000 thousand ha in Lithuania and the Czech Republic and more than 4000 thousand ha in Hungary. This leads to a conclusion that the usage of agricultural or arable land demonstrates how agriculture is developed and what kind of agricultural products are grown and sold.

Population characteristics also have specific features in each of the analysed countries and even overall population numbers are different. Though Lithuania had the smallest population, the rural population was obviously the biggest among all selected countries and accounted for 33.5 percent of the total population in 2016 (the Czech Republic had the smallest rural population of 27.02 percent). The residents of rural areas have their own traditions, lifestyle, preferred activies, etc. Consequently, they face various socio-economic challenges typical to rural areas. In Europe, including the selected countries, ageing is a growing problem.

Further chapters of this book analyse the ageing problem in agriculture in more detail, they look into the generational change and related challenges in agriculture. Furthermore, the break-down of the working population in agriculture by age groups in the selected countries (in 2015) shows that most of the people employed in agriculture were in the older age categories, while the priorities for economic activities among young people (under 39) often concerned other activities generating higher revenues rather than agriculture. Due to the specific way of life of rural populations in many European countries, rural residents suffer poverty and social exclusion. The analysed countries demonstrated similar trends. Based on 2015 data, in Lithuania and Hungary rural residents, who experience poverty and social exclusion accounted for one third or more of the total rural population, while, for example, in the Czech Republic they represented only 13 percent. That suggests that life in rural areas is affected by various factors, which are related to economic activities (families from small farms, the unemployed, etc. more often live in poverty), the socio-economic status of a family, social protection, the agricultural and rural development policy, etc.

The above insights into the countries selected for the research revealed that although they are not very large in geographical terms, the differences in the population numbers, including the rural areas, are tremendous. Similar challenges related to the farm numbers and their structure suggest that the agricultural and rural development policy pursued in those countries could be rather similar, while the measures used in addressing various problems could be discussed through the analysis of good practice examples. This also applies to solving the challenges of rural population ageing, generations in agricultural activities, poverty and social exclusion, etc. prevalent in rural areas

2.2 Stages of development of agriculture and creation of conditions for its development in Slovakia, Czech Republic, Lithuania, Hungary

Slovakia. Historically, a variety of agricultural systems developed **in Slovakia.** After World War II Czechoslovak agriculture suffered major economic and production problems. It was not until the second half of the 1960s that Czechoslovakia's collectivized agriculture would meet the gross agricultural product (GAP) of 1936. 1936 is considered a milestone year in Czechoslovak agriculture. It was an above-average year for GAP – the second highest annual GAP from the interwar period. Although the GAP per hectare of land was surpassed at the beginning of the 1960s and per worker it was surpassed in the early 1950s overall GAP did not meet that of 1936 until 1966.

The collectivization of agriculture and the forming of collective farms and state farms took place in two waves: 1949 – 1953 and 1955 – 1960.

In order to increase agricultural production the most important tasks of these collectives was to join smaller land holdings into larger units, wherein creating larger, collectively cultivated fields, and mechanization of agricultural production. Entry and membership was to be voluntary. Although small-scale agriculture is generally less efficient than larger-scale agriculture, in practice the primary goal of collectivization was to achieve Communist control in rural areas. Therefore it was primarily a political process in reality. Questions of agricultural productivity and economic viability were secondary. Large fields were created, but not used effectively.

Slovakia has a rural character and a significant part of the population lives in the countryside. A minority of Slovak land is owned by small and family farmers and is characterized by low economic output, though their number is significantly higher than large farms with high economic output. Complicated and insufficient legislation (the term family farm is missing) in

Slovakia does not provide an adequate entrepreneurial environment for small, family and young farmers (National Report: Slovakia, 2017).

Slovak agriculture passed through a difficult development after the year 1990, when it had to adapt to conditions of the market economy and restrictions of public support. During this period agricultural production decreased and in this way adapted to a domestic demand influenced by the lower purchasing power of population and by changes that occurred in the structure of consumption and in consumer behaviour of the population. Since the year 1995 the level of production has stabilised.

Slovakia has a rural character and a significant part of the population lives in the countryside. A minority of Slovak land is owned by small and family farmers and is characterized by low economic output, though their number is significantly higher than large farms with high economic output. Complicated and insufficient legislation (the term family farm is missing) in Slovakia does not provide an adequate entrepreneurial environment for small, family and young farmers (National Report: Slovakia, 2017).

Czech Republic. *The description of agriculture development and creation of conditions for its development in Czech Republic prepared in accordance with Bečvářová, V., Zdráhal, I. (2013).*

The post-war land reform took place in the years 1945 -1949, its implementation consisted of three materially and temporally distinct stages:

- Confiscation, distribution and re-settlement of the land of Germans, Hungarians and traitors (1945-1946);
- Revision of the first pre-war land reform (in 1948);
- New land reform enacted after 1948[27].

The existing agrarian structures were significantly altered. The peasant farms and estates ceased to exist; their property formed the basis of the collective or state farms. The property the original peasant self-help cooperatives was nationalized. By 1953, 6679 collective farm was thus founded that farmed on 31% of agricultural land. Without developed service sector and due to deficiencies in the management of this type of farming, the pace of collectivization was unmanageable. The stability of these units was minimal and many collective farms began to crumble.

[27] Bečvářová, V., Zdráhal, I. (2013). Agriculture And Rural Development In The European Model Of Agricultural Policy. Shaping Strategy In The Context Of Changes. Mendel Universiti in Brno.

It was decided to consolidate and promote the collective farms as well as increase the pressure on discrimination of individual farmers. For this purpose, economic instruments were created: *since 1953 delivery system of agricultural products* was introduced based on the principle of a fixed delivery quotas by the unit area as well as dual pricing – purchase price (for obligation delivery to the state) and trade prices (much higher) for deliveries above of this obligation. Quotas were differentiated by size of enterprise and by natural and economic conditions. A system where the decisions on the amount of the delivery obligations (and thus on the rate of the purchase/trade prices) were made primarily by the district agricultural authorities became a powerful tool of collectivization and favoring of the collective farms.

With these forms of support collectivization continued. In 1960, 10,816 collective farms farmed 67% of agricultural land, besides 20.3% of agricultural land was farmed by 365 state farms. At the end of collectivization in 1960's, the Czech agriculture had following business structure:

- *collective farms* result of collectivization, later called joint agricultural enterprises, and some other cooperative enterprises (e.g. amelioration cooperatives);
- *state farms,* especially at land and property confiscated by the state, during latter development they took over the abandoned land of those farmers who had gone into other sectors or unsuccessful collective farms that, despite the high state aid, were not effective;
- *specialized service companies* as factory farms, state enterprises of biological and technical services (selection, seed production, breeding enterprises), machine and tractor stations and repair of agricultural machinery, agricultural constructions, supply and trade enterprises
- only a minimum number of private farms.

In the services and manufacturing sectors, the nationalized enterprises were governed through central administrations, later general secretariats with a nationwide authority.

In the period of collectivization, which was primarily political and organizational challenge, collective farms were usually led by agricultural departments of the district national committees. This included also management of most of the state farms. This system was, however, not able to handle the problems of economic management of agricultural enterprises. *In 1963 agriculture was therefore exempted from the system of national committees* and subordinated to the newly created system of state bodies directly subjected to the Ministry of Agriculture. They were called district and regional agricultural administrations. Some of the

state farms, specialized enterprises of agricultural services and food processing industry were managed on sectorial basis by the production economic units (VHJ) with state-wide authority.
While the period by 1960 was mainly characterized by strong political pressure on change of the relations of production and caused practical, and in many cases violent, liquidation of private property, the following stage is strongly focused on promoting and strengthening the socialist agriculture.
Protectionism, which was manifested in relation to agriculture in the period of collectivization, and the effort to stabilize the complex of food production translated in the mid 1960's into *the concept of a relatively independent system of planned agriculture*.
1970's, associated with the strengthening of the central control, brought also a wave of *concentrations of agricultural holdings*. Extremely high level of economic support to agricultural development was reflected in accelerated performance growth in the sector. By the end of the 1970's, the *gross agricultural output doubled* compared with 1949.
Conditions of the Czech agriculture and rural development in the framework of economic reform and development after 1989. The strategy contained in the reform scenarios of the Czech economy as a whole, to a certain extent saw the food policy as one of the extremely complex area. At the same time it, however, insisted on the condition that agriculture will continue to evolve only within the parameters and general principles of market economy, taken at the macroeconomic level for the entire national economy. Yet it was agriculture that had to implement extremely complex processes as to the extent and impact incomparable with changes in other sectors, especially in the area:

- of restoring of ownership relationships, and
- of economic mechanism.

In 1989 was the economic reform of agriculture of the Czech Republic. Restoration of the land ownership involved nearly 100% of agricultural land. A similar problem had to be resolved in relation to the rest of the tangible and intangible property.
It was implemented in three processes:

- restitution,
- transformation of agricultural cooperatives,
- privatization of the state-owned property.

The recovery process of ownership in agricultural production in 1990's marked a fundamental change in business structure of agriculture.

Specific preparation for accession of the Czech Republic to the EU in agriculture and rural development – linked to the requirement to create conditions for the implementation of rules of the common agricultural policy – was related to these stages.

Pre-accession phase started in 1997 and its content was intended to prepare the Czech Republic for the accession to the EU. In addition to institutional and legislative area it concerned also the changes affecting the scale of production and its structure. *The process of adapting to the legal and market conditions prevailing in the European Union meant for Czech agriculture and the whole agricultural sector not only a change in connection with the adoption of the standards but often also creating the conditions for their implementation.*

In 1999, the Government acknowledged the Concept of departmental policy of the Ministry of Agriculture before accession to the EU. This document established the basic objectives of two stages:

Revitalization (1999-2001) – to *resolve the internal developmental problems* of the Czech agrarian sector and stabilize the sector before its adaptation to the EU conditions and *institutional preparation* for accession to the EU.

Adaptation (after 2001 until the accession to the EU): in addition to the pursuit of competitiveness of the sector and improving the efficiency of production, including the adequacy of consumer food prices, the issues of promoting the environmental functions of agriculture as well as diversification of agricultural holdings gained prominence here.

Economic activity was governed by national economy plan based on the balance of natural and financial resources hierarchically itemized by individual ministries *to the individual businesses along with the volume of production and the organization of production and trade relations. There was a significant redistribution of funds not only within the sector, but also across sectors in the agri-food complex.*

From the production point of view, there has been a significant decrease of production and employment rate with deepening balance of agrarian foreign business. However, the Czech Republic cannot offer another significant decrease of the production capacities (especially for the food usage), because it would limit the ability of its involvement in the agribusiness (with combination with already existing unsuitable organization of distribution chain).

Regarding the development of the rural area (area for environment, landscaping, recreational potential etc.), the Czech Republic uses and supports the reinforcement and orientation of CAP to the development on the rural areas. In this coherence, it is necessary (while forming the future

development of Czech agriculture) to orientate its support with the aim of reinforcing its irreplaceable role, especially in the fields such as the flood protection function of landscape, improving of the environment quality, co making of the recreational landscape character etc. However, this development in geographic, economic and historic conditions of the Czech Republic cannot be in the long term horizon divided from the agrarian production, not even in the less favourable areas (which, regarding their extent will still play an important role in above mentioned production needs).

Lithuania. *The description of agriculture development and creation of conditions for its development in* ***Lithuania*** *prepared in accordance with V. Atkocevičienė, J. Valčiukienė (2015)*[28].

Independent Lithuania's land reform during the period between 1919 and1939 laid the foundations not only for the country's agriculture, but also for the entire nation-state, it was one of the most significant achievements of independence, a real agrarian revolution, which intensified land use. In 1940, another land reform, called the Socialist, was launched. The main motive of this reform was the alignment of ethnic differences by subtracting the land from those who had it and distributing it to poor and landless peasants. During the Soviet era the "planned economy" model was installed in the entire territory of Lithuania, there was no real competence in agricultural activities. After the restoration of Lithuania's independence (1990) market relations began to develop. Land tenure was changed, collectively (state) owned land (during the Soviet period) again found its owners. After the return of land (restitution) a number of private, often small areas of land, which owners were ready to develop agrarian activities in their lands, were formed.

During the process of the land reform in independent Lithuania, only land parcels and not farms were designed since 1997, as land territorial units were required to be registered by law. Thus, land parcels became smaller and scattered. Since the formation of the farm land holdings were left to chance, the rearrangement of the layout of land parcels will be solved during the repeated land management works and during the preparation of land consolidation projects.

[28] Atkocevičienė, V., Valčiukienė, J. (2015). The Change Of Land Users In Lithuania During The Period Between 1920 and 2014. Proceedings of the 7th International Scientific Conference Rural Development 2015. file:///C:/Users/Vartotojas/Downloads/54-973-1-PB.pdf

Agricultural companies and farms of other forms of legal entities, established under the new laws of the Republic of Lithuania, were the ones which mainly preserved the property of former agricultural enterprises (Aleknavičius et al., 2012)[29]

Lithuania has always been an agricultural country. In our days too the agricultural sector plays a very important economic, social, environmental and ethno-cultural function and is considered to be the country's priority sector of the economy (*Atkocevičienė, Valčiukienė, 2015)*.

From the perspective of the agricultural sector, the decade of the membership of **Lithuania** in the EU was rather erratic, characterised by climate change challenges and financial difficulties caused by the global crisis. The EU support under the Common Agricultural Policy (CAP) helped Lithuanian producers and processors of agricultural products to deal with new risks and to pursue their business activities. Although agriculture had been identified as a priority branch of the country's national economy and received support from the national budget already before Lithuania became a member of the EU, neither the scope nor the diversity of measures of the national aid could compare to the support that became available after the accession. Lithuanian farmers and entities engaged in farming activities started receiving support through direct payments and measures of rural development programmes financed by the EU. Compared to the support available till then, the farmers could avail themselves of huge amounts of money. In 2004 through 2014, the amount of the EU direct payments came up to EUR 2,641 million. A further EUR 777 million was contributed by the national budget of Lithuania. Another support measure – support for rural development – was of crucial importance not only to farmers but also to rural population in general and over the period from 2004 to 2014 it amounted to EUR 2,286 million (from the EU and Lithuanian national budget).

The EU support gained special relevance in the light of the new farm structure prevailing after the re-establishment of Lithuania's independence. The Soviet farming system was fully transformed by means of land restitution. In a very challenging environment, new Lithuanian farmers had to go the whole length of farm establishment and organisation despite their lack of financial resources and business management knowledge. The land reform launched following the declaration of independence not only introduced major changes in the ownership structure, but also substantially slimmed down the basic agricultural infrastructure of the past. The reform resulted in reduced arable areas, decreased numbers of livestock, and lower volumes of agricultural output. Due to low incomes, agriculture came to be economically unattractive when

[29] Aleknavičius, P., Aleknavičius, A., Juknelienė, D. 2012. Lietuvos žemės ūkio paskirties žemės naudojimo perspektyvos. Kaimo raidos kryptys žinių visuomenėje, pp. 15–26. (In Lithuanian)

compared to other economic activities. The EU membership provided the national Lithuanian agricultural policy with CAP resources and experience of implementation.

Productivity. The issue of food security has never been a serious concern in independent Lithuania. According to the Department of Statistics, in 2004, the output in Lithuanian agricultural sector exceeded the domestic consumption. Per capita agricultural production included 864 kg of grain, 112 kg of vegetables, 302 kg of potatoes, 547 kg of natural milk, 255 eggs, and 65 kg of meat (carcasses). In the above year, one Lithuanian citizen consumed 127 kg of cereal products, 99 kg of vegetables, 124 kg of potatoes, 302 kg of milk and milk products, and 215 eggs. At the beginning of the EU membership, only meat and meat product consumption (71 kg per person) exceeded the production because the meat production volumes shrank due to the reduction in the animal numbers. Therefore, after the Lithuanian accession to the EU, the objective of improvements to agricultural output was set for reasons not due to a need to address the problem of food shortages unlike in other EU countries at the start of the CAP.

The policy orientation toward improvements to agricultural output was driven by the understanding of **Lithuanian** farmers that larger production volumes meet the needs of the society and generate higher incomes for the farmers. In 2004, most of the farming experience had been gained by the farmers in the period of planned economy under the conditions of persisting deficit of food products and fixed agricultural output buying-in prices. Therefore, the problem of price decrease due to overproduction, e.g. when an export market closes, was hardly known to them. In the allocation of the EU funds for improvements to agricultural output, the priority was given to supporting investments intended to provide farms with capital. As a result, over the period from 2004 to 2014, the gross output and the prices in agriculture, forestry, and fisheries increased more than twofold, from EUR 1,608.4 million to EUR 3,363.2 million (national accounts data). Some of this growth came from the rising agricultural output prices. According to Eurostat data on agricultural accounts, the growth of the agricultural output in response to the increase in prices in 2004 through 2013 accounted for 80.7%. That represented more than one third of the increase in the agricultural output value over this period. The gross value added generated in agriculture, forestry and fisheries was also growing. In 2004 through 2014, it climbed from EUR 760.3 million to EUR 1,133.9 million or by 49.1% .

Intensification of production gave rise to the growth in the production volumes. Income support measures (direct payments and compensation aid) represented a working capital facility for the farmers, who could consequently use more intensive technologies. Those processes were reflected by higher intermediate consumption expenditure in agriculture. According to Eurostat

data on agricultural accounts, over the period from 2004 to 2014 the intermediate consumption expenditure per 1 ha of agricultural land increased twofold. The growth of expenditure on fertilisers/soil improvers and plant protection products (2.3 and 2.5 times, respectively) was faster than the average. Due to increased farm equipment fleets their repair and maintenance costs swell 3.1 times. During the analysed period, the key growth item was agricultural production costs, which are not classified in the group of material costs: other goods and services increased even 3.8 times (this cost group covers a very broad range of goods and services: lease of industrial buildings and long-term assets, salaries for consultants, surveyors, and accountants, communications and transportation costs, insurance premiums, bank charges and costs of financial intermediation services, permit and licence fees, cooperative and trade union membership fees, etc.).

In Hungary the land ownership and farm structure have changed radically three times during the last 60 years. The first land reform took place during 1945-1948 when small-scale individual farms and relatively large state-owned farms were created, based on 15% of the arable land. The land reform started with the nationalisation of land and followed by land distribution to more than half a million poor peasants of 5 hectares of even smaller land areas. The second land reform, the so-called collectivisation, happened when the individual farmers had been forced to join cooperative farms. This process was finished by 1962, when 90% of the total arable land was occupied by large-scale farms, cooperatives and state owned companies. After that period due to the so-called "economic reform" the agricultural policy included more and more market oriented factors and rules. The third land reform took place in the 1990s, when the structure of properties and land use was radically transformed during the political and economic transition period (Dorgai et al., 2004)[30]. The compensation and privatisation affected almost three quarters of the whole agricultural area, about 5.6 million hectares of agricultural land were distributed to the ownership of 2.6 million private persons. An extremely fragmented, bipolar farm structure formed in which the number of small individual farms is disproportionately high. The size of individual farms is highly variable: the number of individual farms which cultivate only 1-2 hectares is very high (although it has decreased in recent years) and those which cultivate 50-100 hectares or more are still few. During recent years the number of private farms which cultivated 50-100 hectares has shown a slight increase but the utilised area is still very low. It means that in Hungary a slight differentiation between farms has started, and several

[30] Dorgai, L. (edit.) et al. (2004). A magyarországi birtokstruktúra, a birtokrendezési stratégia megalapozása; Agrárgazdasági Tanulmányok 2004. 6. szám, Budapest pp. 199.

non-viable holdings have begun a moderated land concentration in the last two decades. Consequently, an organic development of the Hungarian farm structure and organisational system of agricultural production was not possible in the last 60 years, and this can constitute an impediment for the improvement of competitiveness[31])

Decisive factors and stages of development after 1989 in the Selected EU Member states

As a general frame for evaluating the development of actual results in the context of the business environment development after 1989 we can use the characteristics of the development stages of agriculture in the countries of Central and East-ern Europe according to K. Anderson and J. Swinnen (2009)[32], who specify three stages in this period:

- Transition Period, 1989 – 2000, with these phases;
- Liberalization of prices and business (1988 – 1992);
- Ad hoc interventional and regulation interferences („Fire-Brigade Policy Making“) in the first half of the 1990s;

Consolidation and stabilization of policy (Policy Consolidation) since second half of the 1990s.

• Pre-EU Accession Period, which started ast the end of the 1990s, when pol-icy and its tools in our country were modified with the regard to the subsquent implementation and also the general rules and tools of CAP (in this period not really conform with future influences in the frame of Agenda 2000 and Health Check 2003).

• Accession to the EU in 2004 and CAP implementation connected with broadening of the support of agriculture, projecting in the agrarians´ income and also in the support of the rural development. The overall framework, level and type of support in our agriculture based on rules and limits that are a key element in shaping successful strategies of further development and solutions to specific reform measures in the Common Agricultural Policy of the European Union (CAP). Since early 1990's we have witnessed profound changes to this one of the oldest European Community policies which is forced to respond to changing internal and external economic and social environment.

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[31] Tóth, O.. 2013. Farm structure and competitiveness in the Hungarian agriculture. Agroeconomia Croatica 3:2013 (1) p. 26-32

[32] Anderson, K., Swinnen, J. (2009). Distortions to Agricultural Incentives in Eastern Europe and Central Asia. https://www.researchgate.net/publication/254390446_Distortions_to_Agricultural_Incentives_in_Eastern_Europe_and_Central_Asia

3 STRUCTURE OF THE FARMS IN SLOVAKIA, CZECH REPUBLIC, LITHUANIA, HUNGARY

In terms of the economic size, which is measured as the total standard output of the holding, in the analysed countries small farms are more prevalent (Table 2). In 2016, 91.0%, 92.9% and 83.7% of farms in Lithuania, Hungary, and Slovakia, respectively, and half of the farms (59.6%) in the Czech Republic were classified in economic classes 1-5, which include farms with the standard output under 25 thousand euros. In 2010 compared to 2007, the most significant reduction in the number of such farms occurred in Slovakia (68.1%) and the Czech Republic (54.1%). However, in 2013 compared to 2010, the number of small farms in the Czech Republic increased by 17.3%, while in Slovakia it fell by another 5.7%. In 2016 compared to 2013, the situation in those countries changed: the number of farms with the standard output under 25 thousand euros in the Czech Republic shrank by 3.1%, while in Slovakia it increased by 8.0%. The trends in the numbers of small farms in Lithuania and Hungary are the same: in 2010 through 2016 their numbers decreased by on average 15.2% and 13.1% each year.

Analysing the data about agricultural holdings and their structure by age of holder (Table 3) there were observed trendy changes in the selected countries. Comparing the change in the numbers of younger agricultural holding holders (below the age of 35) in 2013 compared to the year 2005 and 2010, was the most significant in the Czech Republic, while comparison of the same years in other countries has shown changes in older groups of agricultural holding holders (Vaznonienė, Atkočiūnienė, 2018[33]).

In Slovakia, to the contrary, the major decrease was observed in the age group of 65 years or above. Taking into account the situation of all the selected countries in all age groups, comparing years 2013 and 2005, the number of agricultural holding holders decreased in terms of absolute numbers. This allows making certain conclusions on the attitude towards agricultural activity and reveals that each analysed country was subject to specific conditions which influenced the decrease in the number of people occupied in agricultural activity. Nonetheless, in Lithuania and Slovakia, comparing years 2013 and 2005, the youngest group increased respectively by 0.4% and 3.6% points in terms of the structure. Comparing the

[33] Vaznonienė, G. Atkočiūnienė, V. 2018. The Ageing Challenges for Agriculture. Proceedings of the 12th International Scientific Conference INPROFORUM: Innovations, Enterprises, Regions and Management. České Budějovice: University of South Bohemia in České Budějovice, p. 393-398.

situation in 2013 and 2010 in the selected countries, the situation different in the youngest group, and only in Slovakia, the number of agricultural holdings holders aged below 35 increased.

It is obvious from the given table that the most significant increase in the number of agricultural holding holders in three countries was observed in the age group from 55 to 64, comparing 2013 to 2005 and 2010. These tendencies confirm theoretical insights that the generational turnover in farming mostly has negative tendencies and the renewal of farmers' population is very slow.

Table 2. Distribution of the physical farm size in selected countries in 2007, 2010, 2013 and 2016 (in ha of UAA per farm)

	Small farms:				Medium farms:				Large farms:				< 20 ha			
	< 5 ha				≥ 5 – < 50 ha				≥ 50 ha							
Year	CZ	LT	HU	SK	CZ	LT	HU	SK	CZ	LT	HU	SK	CZ	LT	HU	SK
Number of farms ×1000																
2007	19,8	139,3	560,2	60,2	13	84,1	54	5,9	6,6	6,9	12,2	2,9	28,4	210,4	601,8	64,8
2010	3,5	117,4	501,6	15,8	12,6	73,9	61,3	5,7	6,8	8,6	13,9	3	11,7	178,8	547,6	20,0
2013	4,9	91,4	415,6	13,9	14,3	70,6	61,6	6,6	7,1	9,8	14,2	3,1	14,4	149,9	461,3	19,0
2016	4,96	75,2	350,12	14,29	14,4	64,34	63,83	8,03	7,16	10,78	16,04	3,34	14,6	127,3	397,7	20,4
% of farms in different size classes																
2007	50,3	60,5	89,4	87,2	33	36,4	8,6	8,6	16,3	3	1,9	4,2	72,0	91,4	96,1	93,9
2010	15,4	58,7	87,0	64,4	54,7	37,0	10,6	23,4	29,9	4,3	2,4	12,2	51,0	89,4	94,9	81,9
2013	18,6	53,2	84,6	58,9	54,4	41,1	12,5	27,9	27	5,7	2,9	13,2	55	87,3	93,9	80,4
2016	18,7	50,0	81,4	55,7	54,3	42,8	14,8	31,3	27,0	7,2	3,7	13,0	55,1	84,7	92,5	79,5
Utilised agricultural area (UAA) 1000 ha																
2007	30	366	359	52	228	1399	877	85	3260	1027	3031	1800	117,1	1042,0	688,1	94,5
2010	6	313	281	28	223	962	926	85	3255	1468	3480	1782	90,8	885,4	733,4	69,4
2013	8,3	251,8	248,9	27,3	246,2	921,8	948,8	99,2	3236,9	1687,6	3458,9	1775,1	107,1	800,6	708,4	79,5
2016	8,75	202,39	225,06	28,82	248,74	873,49	972,71	120,16	3197,93	1848,72	3472,78	1740,84	107,9	701,9	697,5	89,3
% of utilised agricultural area (UAA) in different size classes																
2007	0,9	13,1	8,4	2,7	6,5	50,1	20,5	4,4	92,7	36,8	71	92,9	3,3	39,3	16,3	4,9
2010	0,2	11,4	6	1,5	6,4	35,1	19,7	4,5	93,5	53,5	74,2	94	2,6	32,3	15,7	3,7
2013	0,2	8,8	5,3	1,4	7,1	32,2	20,4	5,2	92,7	59	74,3	93,3	3,1	28,0	15,2	4,2
2016	0,3	6,9	4,8	1,5	7,2	29,9	20,8	6,4	92,5	63,2	74,4	92,1	3,1	24,0	14,9	4,7

Table 3. Agricultural holdings and their structure by age of holder in 2005, 2007, 2010, 2013 (percent)

	Czech Republic				Lithuania				Hungary				Slovakia			
Age group	**2005**	**2007**	**2010**	**2013**	**2005**	**2007**	**2010**	**2013**	**2005**	**2007**	**2010**	**2013**	**2005**	**2007**	**2010**	**2013**
Agricultural holdings by age of holder																
Less than 35 years	3 970	3 590	2 440	1 030	13 190	9 740	11 470	9 570	54 680	46 850	39 720	29 280	2 760	2 390	1 490	1 600
From 35 to 44 years	6 780	6 310	4 150	3 320	47 520	38 030	31 320	23 390	104 080	89 960	81 970	71 060	8 980	7 810	3 170	3 020
From 45 to 54 years	10 970	9 630	5 050	5 400	54 690	47 380	46 960	43 350	182 430	142 350	118 920	93 120	17 690	16 480	5 770	4 990
From 55 to 64 years	10 660	10 170	5 390	7 820	56 340	41 110	36 270	35 190	170 940	167 680	158 120	140 910	17 230	18 240	6 260	6 240
65 years or over	7 030	6 760	2 760	5 780	80 660	93 460	73 260	59 610	194 750	171 840	168 890	148 150	20 040	22 020	5 490	4 980
Structure (%)																
Less than 35 years	10,1	9,8	12,3	4,4	5,2	4,2	5,8	5,6	7,7	7,6	7,0	6,1	4,1	3,6	6,7	7,7
From 35 to 44 years	17,2	17,3	21,0	14,2	18,8	16,6	15,7	13,7	14,7	14,5	14,4	14,7	13,5	11,7	14,3	14,5
From 45 to 54 years	27,8	26,4	25,5	23,1	21,7	20,6	23,6	25,3	25,8	23,0	21,0	19,3	26,5	24,6	26,0	24,0
From 55 to 64 years	27,0	27,9	27,2	33,5	22,3	17,9	18,2	20,6	24,2	27,1	27,9	29,2	25,8	27,2	28,2	30,0
65 years or over	17,8	18,5	13,9	24,8	32,0	40,7	36,8	34,8	27,6	27,8	29,8	30,7	30,0	32,9	24,8	23,9

Based on the 2016 data, economically small farms in Lithuania, taken together, produced slightly more than one fourth (25.9%) of all the agricultural standard output, although their contribution to this production in the analysed period decreased by 24.4 percentage points from 50.3% in 2007 to 25.9% in 2016 (Table 4), unlike in the Czech Republic, Hungary, and Slovakia. Instead, according to the latest data, large farms with the standard output exceeding 100 thousand euros, which fall under economic size Class 8 and Class 9, generated more than half (52%) of the agricultural standard output in Lithuania, although in 2016 those farms accounted for only 2.3% of all farms.

Unlike in Lithuania, based on the 2016 data, economically small farms in the Czech Republic, taken together, produced 2.8% of all agricultural standard output and their contribution to this production in the analysed period decreased by on average 13.9% each year in the analysed period. Large farms in the Czech Republic generated the major part of the agricultural standard output: in 2007 their production accounted for 88.5% and in 2016 their share of the agricultural standard output increased by 3.1 percentage points and came up to 91.6%.

In Hungary in 2016 the share of the agricultural standard output generated by small farms was slightly smaller than in Lithuania (8.2 percentage points) but considerably larger than in Slovakia (in 2016 small farms in Hungary produced 12.2 percentage points more of the agricultural standard output than small farms in Slovakia). Both in Hungary and Slovakia large farms with the standard output exceeding 100 thousand euros produced more than fifty percent of the agricultural standard output (in 2016 they produced 66.1% and 89.4%, respectively) . As it concerns the period of 2007 through 2016, it is obvious that the share of the agricultural standard output generated by large farms in both countries has seen very small changes (in 2016 compared to 2010, the share of the standard output produced by large farms in Hungary and Slovakia increased by 10.2% and 4.4%, respectively).

Table 4. Economic size of the farms in Czech Republic, Lithuania, Hungary and Slovakia in 2005, 2007, 2010, 2013 and 2016 (in EUR of SO distribution)

Year	Small farms: < EUR 25000				Medium farms: ≥ EUR 25000 – < EUR 100000				Large farms: ≥ EUR 100000				Total				Semi-subsistence farming < EUR 4000			
	Czech Repu-blic	Lithu-ania	Hun-gary	Slova-kia	Czech Repu-blic	Lithu-ania	Hun-gary	Slova-kia	Czech Repu-blic	Lithu-ania	Hun-gary	Slova-kia	Czech Repu-blic	Lithu-ania	Hun-gary	Slova-kia	Czech Repu-blic	Lithu-ania	Hun-gary	Slova-kia
Number of farms ×1000																				
2005	33.2	247.9	695.8	65.7	5.2	4.1	14.3	1.3	3.9	0.8	4.6	1.5	42.3	252.8	714.8	68.5	20.4	157.0	602.5	61.4
2007	30.3	224.5	607.8	66.1	5.2	4.8	13.9	1.4	3.9	1.0	4.5	1.5	39.4	230.3	626.3	69.0	18.3	179.0	531.2	60.9
2010	13.9	191.6	554.4	21.1	4.8	6.8	16.4	1.5	4.1	1.6	6.0	1.8	22.9	199.9	576.8	24.5	3.9	146.5	469.6	14.6
2013	16.3	160.5	465.5	19.9	5.3	8.7	18.8	1.7	4.7	2.6	7.1	1.9	26.3	171.8	491.3	23.6	4.1	110.1	388.4	12.4
2016	15.8	136.8	399.3	21.5	5.6	10.1	21.8	2.0	5.1	3.5	8.8	2.2	26.5	150.3	430.0	25.7	4.1	87.8	318.6	12.6
% of farms in different size classes																				
2005	78.5	98.1	97.3	95.9	12.,3	1.6	2.0	1.9	9.2	0.3	0.6	2.2	100	100	100	100	48.2	62.1	84.3	89.6
2007	76.9	97.5	97.0	95.8	13.2	2.1	2.2	2.0	9.9	0.4	0.7	2.2	100	100	100	100	46.4	77.7	84.8	88.3
2010	60.7	95.8	96.1	86.1	21.0	3.4	2.8	6.1	17.9	0.8	1.0	7.3	100	100	100	100	17.0	73.3	81.4	59.6
2013	62.0	93.4	94.7	84.3	20.2	5.1	3.8	7.2	17.9	1.5	1.4	8.1	100	100	100	100	15.6	64.1	79.1	52.5
2016	59.6	91.0	92.9	83.7	21.1	6.7	5.1	7.8	19.2	2.3	2.0	8.6	100	100	100	100	15.5	58.4	74.1	49.0
Euro standard output (SO) × 1000 000																				
2005	167.1	983.5	1449.5	101.8	253.4	182.4	650.6	67.1	3232.6	384.5	2821.9	1152.4	3 653.1	1 550.4	4 921.9	1 321.2	34.5	314.4	607.4	62.5
2007	156.5	664.3	1210.6	109.7	256.4	211.4	650.4	73.6	3180.4	446.1	2794.2	1085.3	3 593.2	1 321.7	4 655.3	1 268.6	30.4	289.0	503.0	63.8
2010	118.3	604.9	1309.3	85.2	243.3	308.9	778.3	78.2	3490.6	612.4	3153.5	1567.6	3 852.2	1 526.3	5 241.0	1 731.0	9.2	213.7	525.0	27.7
2013	145.0	605.6	1153.0	90.5	273.7	411.8	888.1	85.6	4028.3	901.8	3536.6	1636.1	4 447.0	1 919.2	5 577.7	1 812.2	9.6	170.4	390.9	24.1
2016	142.4	575.6	1156.1	106.2	284.6	493.3	1056.7	99.3	4655.0	1157.3	4319.7	1725.9	5 081.9	2 226.2	6 532.5	1 931.4	9.9	130.9	352.9	23.4

% of standard output (Euro SO) in different size classes																			
2005	4.6	63.4	29.5	7.7	6.9	11.8	13.2	5.1	88.5	24.8	57.3	87.2	100	100	100	100	0.9	20.3	12.3	4.7
2007	4.4	50.3	26.0	8.6	7.1	16.0	14.0	5.8	88.5	33.8	60.0	85.6	100	100	100	100	0.8	21.9	10.8	5.0
2010	3.1	39.6	25.0	4.9	6.3	20.2	14.9	4.5	90.6	40.1	60.2	90.6	100	100	100	100	0.2	14.0	10.0	1.6
2013	3.3	31.6	20.7	5.0	6.2	21.5	15.9	4.7	90.6	47.0	63.4	90.3	100	100	100	100	0.2	8.9	7.0	1.3
2016	2.8	25.9	17.7	5.5	5.6	22.2	16.2	5.1	91.6	52.0	66.1	89.4	100	100	100	100	0.2	5.9	5.4	1.2

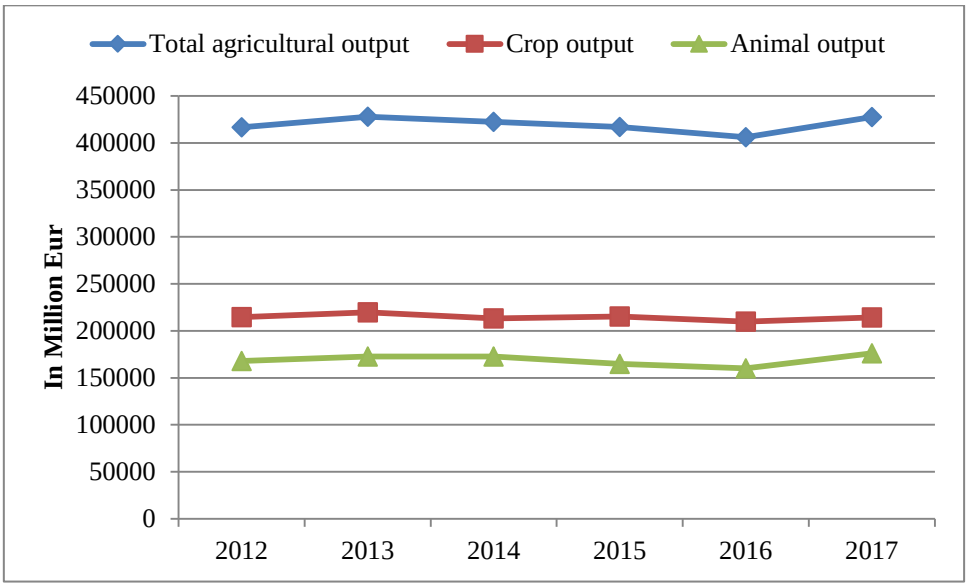
Source: calculated by the authors, based on Eurostat – Farm Structure Survey

4 AGRICULTURAL PRODUCTION IN SLOVAKIA, CZECH REPUBLIC, LITHUANIA, HUNGARY

The agricultural industry contributed EUR 183.0 billion towards the EU's overall GDP in 2017.

The remaining part (8.5%) included agricultural services and inseparable non-agricultural secondary activities.

In 2012 through 2017, the rates of the production of agricultural output differed among the EU member states (Figure 4).



Source: created by the author, based on EUROSTAT. 2018. Agriculture.

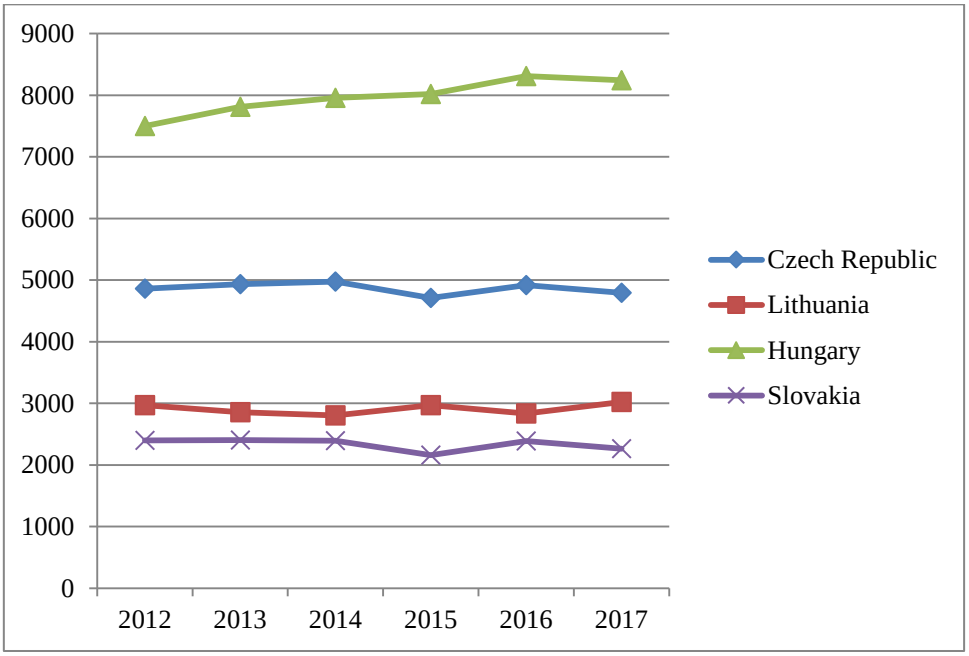
Figure 4. Agricultural output in the European Union, 2012-2017 (in million Eur)

In 2013 compared to 2012, the value of the agricultural output was 2.7% larger, however in 2014 the volume of the agricultural output started shrinking (both in 2014 and 2015 production volumes decreased by 1.3% compared to the year before and by 2.6% in 2016 compared to 2015) (Figure 4). However, in 2017 compared to 2016, the amount of the agricultural output generated in the EU members increased again, which was the most significant growth over the whole analysed period (5.2%).

In 2017 compared to 2016, the share of the agricultural output produced in Lithuania increased by 6.7% (Figure 5).

However, according to the LIAE (2019), due to exceptional natural events (drought and extreme rainfall), which worsened the economic results of the farms in 2016 and 2017, there was no sharp increase in the total agricultural output in the analysed period, i.e. 2012–2017.[34]

In Hungary and the Czech Republic, the share of the total agricultural output reduced by 0.8% and 2.5%, respectively, and in Slovakia it shrank as much as by 5.4% (Figure 5). The negative trends could have been the result of lower yields and a fall in the cropping output prices.



Source: created by the author, based on EUROSTAT. 2018. Agriculture.

Figure 5. Agricultural production in selected countries, 2012-2017 (in million Eur)

The structure of the total agricultural output differs from one EU state to another. Lithuania, just like the Czech Republic, Slovakia and Hungary, falls within a group of countries where crop production prevails. An examination of the volume of the agricultural output in the selected countries revealed that in 2017 the vast majority of the output was produced in Hungary (45.0%); the percentage in the Czech Republic was slightly lower (26.2%), while in Lithuania and Slovakia it accounted for 16.5% and 12.3%, respectively.

[34] Lietuvos žemės ir maisto ūkis (*Agriculture and food sector in Lithuania*). Author team: R. Melnikienė – leader… [et. al.]. Vilnius: Lithuanian Institute of Agrarian Economics, 2019. 216 p.

The crop output volumes in the analysed countries differed among different years. In the Czech Republic, the crop output suffered a significant reduction of 9.9% in 2017 compared to 2016, although in 2016 compared to 2015 it had increased by 7.6%. (Table 5).

Table 5. Output of agricultural industry and its components in the in Slovakia, Czech Republic, Lithuania, Hungary, percentage change, in percent

	Percentage change 2013 vs. 2012			Percentage change 2015 vs. 2014			Percentage change 2017 vs. 2016		
	Total agricultural output	Crop output	Animal output	Total agricultural output	Crop output	Animal output	Total agricultural output	Crop output	Animal output
Czech Republic	1,5	2,5	0,8	-5,3	-4,9	-9,0	-2,5	-9,9	10,0
Lithuania	-3,9	-11,8	7,8	5,9	14,6	-11,7	6,7	2,3	16,4
Hungary	4,2	5,9	1,3	0,8	-0,6	1,9	-0,8	-4,5	5,2
Slovakia	0,4	1,3	-0,7	-9,7	-11,5	-12,0	-5,4	-10,6	2,4

In Lithuania, the crop output demonstrated major variations: in 2013 compared to 2012 it shrank by 11.8%, whereas in 2015 compared to 2014 it grew by 14.6%. (Table 11). Both in 2015 and 2017 the trends in Slovakia were negative: in 2015 compared to 2014 and in 2017 compared to 2016 the crop output reduced significantly by 11.5% and 10.6%, respectively. On the other hand, in 2016 compared to 2015 the crop output showed an increase of 21.1%. The smallest variations were observed in Hungary, although the trends in the recent years are not particularly encouraging: in 2017 compared to 2016, the crop output volume was 4.5% lower. In 2017 compared to 2016 the livestock output increased in all the four countries: from 2.4% in Slovakia to 16.4% in Lithuania. The volumes of the agricultural output were seriously affected by the quantities of the buying-in of agricultural products, the prices of material resources used in the production of agricultural output, etc.

5 SUPPORT MECHANISMS WITHIN THE MAIN COMMODITIES OF PLANT AND LIVESTOCK PRODUCTION IN SLOVAKIA, CZECH REPUBLIC, LITHUANIA, HUNGARY

5.1 The public support for European Agriculture and selected countries priorities

A grant is activity-specific financial and material support received from municipal institutions, the government, international organisations and funds, and other third parties. Grants have the purpose of increasing benefits for businesses through public support. At the same time, grants help to reduce negative consequences, especially in countries, where competitiveness is low and the capital is insufficient for the modernisation of an agricultural production unit.

EU producers are highly dependent on public support. Farmers' incomes are supported by the European Union by means of direct payments (https://ec.europa.eu/agriculture/cap-funding/funding-opportunities_en). In return, farmers are obliged to carry out agricultural activity and to respect a number of standards regarding food safety, environmental protection, animal welfare and the maintenance of land in good environmental and agricultural condition. Rural Development funding helps to improve the competitiveness of farming and forestry, to protect the environment and the countryside, to improve the quality of life, to diversify the rural economy and to support locally-based approaches to rural development.

The agricultural expenditure is financed by two funds, which form part of the EU's general budget: the **European Agricultural Guarantee Fund (EAGF)** which primarily finances direct payments to farmers and measures to regulate agricultural markets, and the **European Agricultural Fund for Rural Development (EAFRD)** which co-finances the rural development programmes of the Member States. The system of direct payments in the Common Agricultural Policy is mainly based on the **single payment scheme and single area payment scheme**, under which the amount of direct payment that you receive is not related to (decoupled from) the quantity of output from your farm or how many animals you have, which used to be the case in the past.

The main aim of direct payments is to support farmers' incomes. In return farmers are obliged to undertake agricultural activity on their land and to respect a number of standards concerning food safety, environmental protection, animal welfare and the maintenance of land in good environmental and agricultural condition.

Under certain conditions, Member States may decide to reduce the amount of the decoupled direct payment and decide to base the amount on the quantity of output or the number of animals that a farmer has.

The EU average share of direct payments in agricultural factor income in 2011-2015 stood at 28% (European Commission, 2013).

The CAP consists of two 'pillars', the first includes direct payments (i.e. annual payments to farmers to help stabilise farm revenues in the face of volatile market prices and weather conditions) and market measures (to tackle specific market situations and to support trade promotion). The second pillar concerns rural development policy and it is aimed at achieving balanced territorial development and sustaining a farming sector that is environmentally sound, as well as promoting competitiveness and innovation. The **CAP 2014-2020** accounts for **38% of the EU budget**. Under the 2014-2020 Multiannual Financial Framework, a total of **€408.31 billion** is earmarked for the CAP, of which the largest part (**€308.72 billion**) is allocated to the first pillar, whereas the remaining **€99.6 billion** is allocated to the second pillar (Sgueo *at al.*).

Member States have the flexibility to transfer 15 % of their direct payment envelope from Pillar 1 to Pillar 2 as well as in the opposite direction from Pillar 2 to Pillar 1. In the case of the transfer from Pillar 2 to Pillar 1, 12 Member States are permitted to transfer an additional 10 %, bringing the maximum transfer permitted up to 25 % (Art. 14 of Reg. (EU) No. 1307/2013). These countries are Bulgaria, Estonia, Spain, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Finland, Sweden and the United Kingdom (European Commission, 2016).

In Lithuania, the key priorities, as outlined in Lithuania's national strategy, consisted of ensuring a certain level of farmers' income, maintaining the current production level, revitalising the livestock sector, and uncovering new markets for domestic products. The objective of 'viable food production' was thus considered very important. Under Pillar 2, the main goal was productivity and rural vitality, i.e. the promotion of technical progress, innovation and eco-farming, and the development of quality schemes. The objective of 'balanced territorial development' was also considered to be quite important, especially under Pillar 1, where payments for young farmers and other direct payments were implemented in order to help the rural population and involve more young people in agriculture. For Pillar 2, the two main objectives were supporting farm and business development, village renewal and providing main services. The objective of 'sustainable management of natural resources' was understood as less of a pressing issue in Lithuania, however certain specific environmental

issues were addressed in details in the RDP, such as afforestation, biodiversity, water management, and preserving forest systems.

The general objective of 'viable food production' was the most important one **in Hungary**. Under Pillar 1, the implementation choices for Voluntary Coupled Support highlighted productivity. Under Pillar 2, this is closely linked to supporting young farmers while encouraging older farmers to take early retirement and to incentivise transfer of farm businesses. Also attention was given to the simplification of the support system for small farmers. The objective of 'sustainable management of natural resources' received limited attention. Under Pillar 1, greening was implemented with high flexibility as for example chemical weed control is allowed on fallow land. Under Pillar 2 however, this objective received more attention. M4: Investment support (34%) clearly prioritises energy efficiency and the use of renewable energy. In terms of budget the AEC scheme has received the second largest amount of planned expenditure (15%). 'Balanced territorial development' was not a priority in Hungary. However, there exists the intention of supporting the creation of jobs and village renewal.

Slovakia's main priorities include enhancing productivity and reducing unemployment in rural areas. The competitiveness and the functioning and development of the supply chain were also highly discussed topics during the negotiations, and animal as well as fruit and vegetable production were reiterated as important priorities as they have been on the decline since 1989. The objective of 'viable food production' is thereby considered to be the most important for Slovakia, and the decision was taken to transfer funds from Pillar 2 to Pillar 1 by implementing investment measures in order to address unemployment. The objective of 'balanced territorial development' is the second most important - the eastern part of Slovakia suffers from unemployment and the government's choices are therefore directed towards addressing this issues. The objective of 'sustainable management of natural resources' is not held as a top priority in Slovakia with respect to its agriculture and rural development.

Czech authorities developed in 2014 a national strategy for agricultural development in the country, which was also made public. The national strategy thereby takes into consideration the overall CAP objectives and national possibilities to support the agricultural sector according to national interests and priorities. The main objectives, the Czech republic has attached importance to are 'viable food production', mainly under Pillar 1 through providing support for income through productivity increase, and 'sustainable management of natural resources and climate action', primarily under Pillar 2 which is focused on an harmonised approach for

increased productivity while also increasing environmental protection and quality (Priority 2 and 4 receive 83% of the planned expenditure under Pillar 2). In reality all decisions are based on these two key objectives. The third objective of 'balanced territorial development' did not receive the same amount of attention as the first two.

The summary of choices of selected countries for implementation of CAP presented in the table 6.

Table 6. Summary of CAP implementation choices

Indicators		Lithuania	Hungary	Slovakia	Czech Republic
Budgets 2014 - 2020 bill. Eur	Pillar 1	2,73	7,62	2,62	5,24
	Pillar 2	1,61	3,45	1,56	2,17
Transfer from Pillar 2 to pillar 1 %		no flexibility between the two Pillars	15	21,3	3,4-1,3
Small Farmers Scheme		No small farmers scheme	Implemented	No small farmers scheme	Not implemented
Voluntary Coupled Support %		up to 15	15	13	15

Source: produced by European Commission, 2016.

In the countries involved in the research, farms in all economic size classes received subsidies for production in the analysed period. Every year, the largest amounts of grants were received by Slovak farmer's holdings, while the smallest amounts were received in Lithuania (up to 15-17 times smaller than in Slovakia).

5.2 The analyses of financial support in selected countries

The FADN database provides information on subsidies received by farmer's holdings attribued to six economic size classes (Table 7).

Table 7. Total subsidies (excluding on investments) to farms of selected countries in 2011-2015 EUR

Year	Economic size class EUR						
	2 000 – < 8 000	8 000 – < 25 000	25 000 – < 50 000	50 000 – < 100 000	100 000 – < 500 000	>= 500 000	Total
LITHUANIA							
2011	3001	6448	13493	23167	57459	192296	8110
2012	3199	5812	13489	22023	43457	163185	8346

2013	3735	7190	15001	23623	46856	175155	9561
2014	2824	7273	14510	22446	46436	204395	9194
2015	4008	7881	14403	22071	45302	200019	9767
HUNGARY							
2011	2978	6435	18163	29258	69502	526401	17617
2012	1893	4853	13185	25365	65383	410137	15822
2013	2224	5240	14105	27942	69509	470464	17297
2014	1924	5737	14158	26570	67335	488415	17359
2015	1987	5956	13420	26379	65628	383328	15978
SLOVAKIA							
2011	x	x	25114	59264	141847	480365	158295
2012	x	x	20338	40311	129564	431266	128575
2013	x	x	22974	43341	117941	418582	150775
2014	x	x	26865	36683	125202	445992	158186
2015	x	x	28216	39694	126295	411106	152097
CZECH REPUBLIC							
2011	x	12196	24183	37032	114865	428124	81443
2012	x	11662	23732	32375	107509	404245	73159
2013	x	11944	21148	32342	110871	499177	83254
2014	x	10698	20288	31475	107987	513153	83465
2015	x	10214	19599	31130	103744	520774	83951

Source: produced by EUFADN Database

Data presented in Table N2 show the same trend in all analysed countries: the higher economic class a farmer's holding belongs to, the larger subsidies they get. For instance, in 2011 through 2015 the subsidies received by Lithuanian and Hungarian farms in the highest economic class (>= EUR 500 000) were 49-72 and even 176-253 times higher than the subsidies received by farms in the lowest economic class (EUR 2 000 – < 8 000) in a respective country.

The analysis of changes in subsidies received in 2011 through 2015 calculated chain and base changes (base year 2011) and the average rate of change, which describes the average increase or decrease in subsidies for farmer's holdings in each economic size class and the total subsidy amounts received by farmer's holdings over the analysed period (5 years) in Lithuania, Hungary, Slovakia and the Czech Republic.

The calculation of the chain changes showed that the largest increase in subsidies was seen in Slovakia in 2013 compared to 2012, which was 17.27Į, while the largest decrease was also recorded in Slovakia, where the subsidy amounts received in 2012 shrank by 18.78% compared to 2011. In other countries the most significant increase in subsidies was also observed in 2013 compared to 2012: 14.56% in Lithuania, 13.80% in the Czech Republic, and 9.32% in Hungary. In Lithuania the most significant reduction of 3.84% occurred in 2014 compared to 2013, while

in Hungary and the Czech Republic the largest reduction of 10.19% and 10.17%, respectively, was seen in 2012 compared to 2011.

The analysis of chain changes by economic size classes showed that in Lithuania and Hungary the largest increase and decrease in subsidies is found in farms in the lowest economic class EUR 2 000 – < 8 000. The comparison of subsidies received by Lithuanian farms in this economic size class in 2015 compared to 2014 revealed that they increased by 41.93%, whereas in 2014 compared to 2013 they decreased by 24.39%. A very similar decrease (24.37%) was also observed in Lithuania in the economic size class EUR 100 000 - < 500 000 in 2012 compared to 2011. In Hungarian farms in the lowest economic class EUR 2 000 – < 8 000 the most significant increase in subsidies (17.49%) was observed in 2013 compared to 2012, while the largest decrease of 36.43% was recorded in 2012 compared to 2011.

The trends in Slovakia and the Czech Republic are slightly different: the largest decrease in subsidies was seen in the economic size class EUR 50 000 - < 100 000 in 2012 compared to 2011: they reduced by 31.98% in Slovakia and by 12.58% in the Czech Republic. In Slovakia the most significant increase in subsidies of 16.94% was observed in the economic size class EUR 25 000 - < 50 000, while in the Czech Republic the biggest increase of 23.48% was in the economic size class >= EUR 500 000 in 2013 compared to 2012.

The calculation of the base changes, where 2011 is chosen as the base year, showed that the largest increase in subsidies (20.43%) was seen in Lithuania in 2015, while the largest decrease (18.78%) was recorded in Slovakia in 2012. It should be noted that only in Lithuania subsidies received each year exceeded those in 2011, whereas in Hungary and Slovakia subsitie was every year lower than in 2011. The information on subsidy trends in the Check Republic is different. Here there were 10.17% less subsidies in 2012 than in 2011, and slightly more (2-3%) in 2013-2015.

The analysis of subsidy changes by farm economic size classes, where 2011 is chosen as the base year, reveals significant differences. The largest increase in Lithuania (33.5%) occurred in 2015 in EUR 2 000 - < 8 000 farms, while the largest decrease (24.37%) was recorded in 2012 in farms in the economic size class EUR 100 000 - < 500 000. In Hungary a slight increase of 0.01% was recorded only in 2013 in EUR 1 000 - < 5 000 farms, while the largest decrease (36.43%) occured in 2012 in farms in the economic size class EUR 2 000 - < 8 000. The largest increase in Slovakia (12.35%) occurred in 2015 in EUR 25 000 - < 50 000 farms, while the largest decrease (38.10%) was recorded in 2014 in farms in the economic size class EUR 50 000 - < 100 000. In the Czech Republic both the largest increase and the largest decrease

happened in 2015 compared to 2011. The strongest increase in subsidies was seen in farms in the economic size class >= EUR 500 000 (21.46%), while the largest reduction occurred in farms in the economic size class EUR 25 000 - < 50 000 (18.96%).

The average rate of change, which describes the average increase or decrease in an indicator over an analysed period, provides aggregated information regarding variations in the level of subsidy. Among all analysed countries the largest average increase in subsidies over five years was observed in Lithuania, where the average rate of change was +4.76%. In the Czech Republic the average rate of change was also positive, however it was only +0.76%. The worst value of this indicator was obtained in Hungary, where the average rate of change based on the data of this country was negative and accounted for -2.41%. In Slovakia the average rate of change is also negative (-0.99%).

The analysis of the average rate of change by the farm economic size class reveals major variances. In Lithuania, the highest rate of change calculated with regards to subsidies for farmer's holdings in the economic size class EUR 2 000 - < 8 000 was +7.50%. In the meantime, the rate of change in this economic size class in Hungary reflects a marked reduction of 9.62%. In Lithuania, this indicator evidences a reduction in subsidies for farms in the economic size classes EUR 50 000 - < 100 000 and EUR 100 000 - < 500 000 by 1.20% and 5.77, respectively. Slovakia and the Czech Republic have only one economic size class each, where the average rate of change is positive: in Slovakia those are EUR 25 000 - < 50 000 farms, where the calculated indicator is +2.95%, and in the Czech Republic an average increase in subsidy of 5.02% is found the economic size class >= EUR 500 000. In Slovakia, the largest negative average rate of change was in the economic size class EUR 50 000 - < 100 000 (-9.53%), while in the Czech Republic it was in the economic size class EUR 8 000 - < 25 000.

In conclusion, the most significant increase in the level of subsidy for farms in the analysed period was in Lithuania and the largest decrease was in Hungary. The analysis of subsidy changes in different economic size classes does not evidence a strong trend of increase or decrease. In the analysed countries, subsidies for farms in different economic size classes both increased and decreased.

Following and overview of the general subsidy trends, it is necessary to consider farm specialisation and to analyse subsidies for different types of farming. It was chosen to analyse separately subsidies for crop and livestock farms and milk production holdings.

Data on subsidies for crop farming in Lithuania, Hungary, Slovakia, and the Czech Republic in 2011-2015 are presented in Table 8.

Table 8. Total subsidies on crops to farms of selected countries in 2011-2015

Year	Economic size class EUR						
	2 000 - < 8 000	8 000 - < 25 000	25 000 - < 50 000	50 000 - < 100 000	100 000 - < 500 000	>= 500 000	Total
LITHUANIA							
2011	5	23	39	41	232	1450	28
2012	-	-	-	-	-	376	2
2013	-	-	-	-	-	15	0
2014	-	-	-	-	-	-	-
2015	79	145	379	722	2354	8537	292
HUNGARY							
2011	18	35	249	349	2266	26451	512
2012	-	30	272	897	2398	28416	670
2013	-	28	115	878	1394	26856	565
2014	-	20	50	70	213	966	44
2015	34	125	286	683	1845	17790	513
SLOVAKIA							
2011	x	x	-	-	-	-	-
2012	x	x	749	-	435	14201	3039
2013	x	x	76	675	331	15606	3971
2014	x	x	130	486	1052	15677	4172
2015	x	x	70	294	1242	9102	2633
CZECH REPUBLIC							
2011	x	2	-	39	62	1132	143
2012	x	-	-	24	69	1331	154
2013	x	-	14	63	88	1056	136
2014	x	-	10	78	118	2131	255
2015	x	34	194	397	2159	22555	2826

Source: produced by EUFADN Database

It appears from the table that Hungarian and Czech farmers received subsidies for crop farming during the whole analysed period, while in Lithuania and Slovakia crop farming was not subsidised in 2014 and 2011, respectively. Furthermore, FADN does not provide data about subsidies for crop farming in the smallest economic size class (EUR 2 000 - < 8 000) in Slovakia and the Czech Republic or farmer's holdings in the EUR 8 000 - < 25 000 economic size class in Slovakia. When analysing subsidies for crop farming, it is important to note that in 2015 the levels of subsidy significantly increased in all countries, except Slovakia. In Slovakia subsidies for crop farming increased only in one economic size class, i.e. EUR 100 000 - < 500 000.

The calculation of chain changes in subsidies for crop farming showed that the largest increase in subsidies was in the Czech Republic in 2015 compared to 2014, when the level of subsidy substantially increased by 10 times. In Hungary in 2012 compared to 2011 and in Slovakia in 2013 compared to 2012 subsidies for crop farming followed a similar trend and increased by 30.86% and 30.67, respectively. The greatest reduction in the level of subsidy for crop farming in Lithuania was in 2012 compared to 2011 (92.86%) and in Hungary in 2014 compared to 2013 (92.21%).

The analysis of chain changes by economic size classes reveals that Lithuanian data are somewhat out of step as subsidies for farms in most economic size classes were only available in the first and last years of the analysed period. In other countries, subsidies for crop were both increasing and decreasing in all economic size classes. In Hungary, the largest increase in subsidies (157.02%) occurred in farms in the economic size class EUR 50 000 - < 100 000 in 2012 compared to 2011. In the meantime, the largest reduction in the level of subsidy in this country is demonstrated by data from farms in the economic size class >= EUR 500 000 in 2014 compared to 2013, when subsidies shrank by 96.40%. In Slovakia and the Czech Republic, the greatest fall in the level of subsidy was observed in farms in the economic size class EUR 25 000 - < 50 000: in Slovakia in 2013 compared to 2012 subsidies for crop farming decreased by 89.85%, while in the Czech Republic in 2014 compared to 2013 they shrank by 28.57%. In 2015 compared to 2014, in the same class of farms in the Czech Republic crop subsidies increased by 18 times. In Slovakia the biggest increase in subsidies for crop farming occurred in 2014 compared to 2013 in farms in the economic size class EUR 100 000 - < 500 000, when the level of subsidy increased by almost 22 times.

The calculation of the base changes in subsidies for crop farming, where 2011 is chosen as the base year, showed that the largest increase in subsidies (18.76 times) was seen in the Czech Republic in 2015, while the largest decrease (91.41%) was recorded in Hungary in 2014. The analysis of crop subsidy changes by farm economic size classes, where 2011 is chosen as the base year, revealed that the largest increase occurred in 2015 the farms of the Czech Republic attributed to the economic size class EUR 100 000 - < 500 000, where subsidies increased by 33.82 times. The largest reduction in the level of subsidy for crop farming in Lithuania was in 2012 in farms in the economic size class >= EUR 500 000 (98.97%).

The average rate of change was calculated for assessing subsidy trends in three countries, while the data from Lithuanian farms were not taken into account due to the aforesaid considerable lapse of time separating the years when subsidies were available to crop farms. The average

rate of change demonstrated that in the analysed period the greatest increase in subsidies for crop farming took place in the Czech Republic, on average by 110.84% per year. The largest positive rate of change (272.25%) both in the above country and among all the analysed countries was observed in Czech farms in the economic size class EUR 25 000 - < 50 000. In the meantime, subsidies for farms in this class in Slovakia showed the steepest decline among all the analysed countries and their average rate of change was negative (-54.62%). In Hungary, the largest positive rate of change in subsidies for crop farming was in farmer's holdings in the economic size class EUR 8 000 - < 25 000 (+37.47%), the largest negative average rate of change was in the farms attributed to the economic size class >= EUR 500 000 (9.44%).

In the light of the performed analysis of subsidies for crop farming, it is important to emphasise a significant increase in Lithuania, Hungary and the Czech Republic in 2015. However, there are no pronounced trends of subsidies for farmer's holdings in any one economic size class.

Table No 9 displays data on subsidies for livestock farming in Lithuania, Hungary, Slovakia and the Czech Republic in 2011 - 2015. The table is based on the official statistics of FADN.

Table 9. Total subsidies on livestoc to farms of selected countries in 2011-2015

Year	Economic size class EUR						
	2 000 - < 8 000	8 000 - < 25 000	25 000 - < 50 000	50 000 - < 100 000	100 000 - < 500 000	>= 500 000	Total
LITHUANIA							
2011	185	390	494	762	1189	6180	356
2012	150	394	551	764	451	1145	316
2013	214	452	637	430	562	1591	365
2014	265	655	949	984	1659	20338	664
2015	617	1031	2010	2897	5022	39939	1377
HUNGARY							
2011	68	318	868	925	1602	47008	980
2012	37	187	631	1189	1785	27810	761
2013	71	258	819	1834	2899	35777	1043
2014	35	224	832	1544	2243	33162	913
2015	79	315	838	1711	3237	42753	1189
SLOVAKIA							
2011	x	-	562	2318	4303	18867	5753
2012	x	-	475	404	1341	16469	3634
2013	x	-	122	211	995	15537	4031
2014	x	-	901	1197	4350	30947	9105
2015	x	-	2054	2337	6880	44153	13592
CZECH REPUBLIC							
2011	x	296	573	912	2907	18535	2901

2012	x	288	578	777	2334	10474	1801
2013	x	215	367	562	2065	10148	1626
2014	x	467	760	1173	3611	18749	3035
2015	x	553	1220	1672	4765	28714	4478

Source: produced by EUFADN Database

Table 9 data evidence the upward trends in subsidies for livestock farming in all analysed countries. Just as in the case of information on subsidies for crop farming, FADN does not provide data on subsidies for livestock farming in the smallest economic size class (EUR 2 000 - < 8 000) in Slovakia and the Czech Republic or farmer's holdings in the EUR 8 000 - < 25 000 economic size class in Slovakia. The levels of subsidy for this production are growing in all the analysed countries, however a variety of increase/decrease patterns is observed among different years and subsidies made available for different economic size classes.

The calculation of the chain changes in subsidies for livestock farming showed that the largest increase in subsidies was in the Slovakia in 2014 compared to 2013, when the level of subsidy increased by 125.87%. In the Czech Republic, the largest increase also occurred in 2014 compared to 2013 (86.65%). The most significant increase in subsidies for livestock farming in Lithuania was recorded in 2015. Compared to 2014, there was a 107.38% growth. Hungary has not recorded such dramatic increases: in 2013 compared to 2012 subsidies went up by 37.06% and in 2015 compared to 2014 they grew by 30.23%. In 2012 compared to 2011, all countries experienced a reduction in the level of subsidy for livestock farming: 37.92% in the Czech Republic, 36.83% in Slovakia, 22.35% in Hungary, and 11.24% in Lithuania.

The analysis of the chain changes by economic size classes revealed a considerable diversification. In Lithuania, the largest increase in subsidies for livestock farming was recorded in farmer's holdings in the economic size class >= EUR 500 000 in 2014 compared to 2013, when the level of subsidy increased by 1,178.32%, and the largest decrease was in the same class in 2012 compared to 2011, when the level of subsidy decreased by 81.47%. The Czech Republic also recorded the largest decrease in subsidies (43.49%) in the same year and the same economic size class. Here changes in the subsidy levels were mostly felt by farms in the economic size class EUR 8 000 - < 25 000, which enjoyed an increase of 117.21% in 2014 compared to 2013. In Hungary, the largest increase and the largest decrease in subsidies for livestock farming were observed in farms in the economic size class EUR 2 000 - < 8 000: in 2015 compared to 2014, the level of subsidy for livestock farming increased by 125.71% and in 2014 compared to 2013 it shrank by 50.70%. In Slovakia, the largest increase in subsidies for livestock farming was in farms in the economic size class EUR 25 000 - < 50 000 (638.52%)

and the largest reduction was in farms in the economic size class EUR 50 000 - < 100 000 in 2012 compared to 2011 (82.57%).

The calculation of the base changes in subsidies for livestock farming, where 2011 is chosen as the base year, showed that in all selected countries the data for 2015 stand out in terms of the increase from 21.33% in Hungary to 286.80% in Lithuania (as a comparison, in the Czech Republic and Slovakia the increase was 54.36% and 236.26%, respectively). In Lithuania, Hungary, and Slovakia, the largest decrease in subsidies for livestock farming was recorded in 2012 compared to 2011: 11.24%, 22.35%, and 36.83%, respectively. The most significant decrease in subsidies for livestock farming in the Czech Republic was seen in 2013 (43.95%).

The analysis of livestock subsidy changes by farm economic size classes, where 2011 is chosen as the base year, revealed that the largest increase occurred in 2015 in the farms of Lithuania attributed to the economic size class EUR > 500 000, where subsidies increased by 5.46 times. However, in 2012 the largest decrease in subsidies was also seen in the same class of Lithuanian farms (81.47%). Among all the analysed countries, subsidies for livestock farms attributed to the economic size class EUR 50 000 - < 100 000 showed the steepest decline in 2013 in Slovakia (90.90%). Both in Slovakia and the Czech Republic the most significant increase in the level of subsidy for livestock farming was identified in 2015 in farms in the economic size class EUR 25 000 - < 50 000, which was 265.48% and 112.91%, respectively. Hungary does not demonstrate any strong year or farm size related trends: the largest increase of 102.06% was observed in 2015 in subsidies for farms in the economic size class EUR 50 000 - < 100 000, while the most significant decrease of 48.53% was in 2014 in subsidies for farms in the economic size class EUR 2 000 - < 8 000.

The calculation of the average rate of change in subsidies for livestock shows that in the analysed period subsidies for this type of production in Lithuania increased on average by 40.24% per year. In Slovakia, the Czech Republic, and Hungary the average rate of change was +23.98%, +11.46%, and +4.95%, respectively. In this subsidy area, an average rate of change reflecting a decrease was found only in Hungary: -0.24% in farms in the economic size class EUR 8 000 - < 25 000, -0.88% in farms in the economic size class EUR 25 000 - < 50 000, and -2.34% in farms in the economic size class > EUR 500 000. The analysis of the average rate of change by economic size class reveals that in Slovakia and the Czech Republic it had the highest value in farms in the economic size class EUR 25 000 - < 50 000, +38.27% and +20.80%, respectively. In Hungary, the largest positive average rate of change was found in farmer's holdings in the economic size class EUR 100 000 - < 500 000 (+19.23%), and in Lithuania it

was in farms attributed to the economic size class >= EUR 500 000 (+59.44%). That was the highest average rate of change among all countries and all economic size classes.

Given the above, it should be pointed out that in the overall context subsidy trends in livestock farming in Lithuania clearly stand out: subsidy levels were increasing in all economic size classes. Moreover, the higher economic class farmer's holdings belonged to, the higher growth in the level of subsidy they enjoyed.

In the context of the farm subsidy trends, it is interesting to analyse subsidies to one of the most important agricultural production areas – milk production. Information on subsidies received by dairy farms in Lithuania, Hungary, Slovakia, and the Czech Republic is presented in Table 10.

Table 10. Total subsidies on dairying to farms of selected countries in 2011-2015

Year	Economic size class EUR						
	2 000 - < 8 000	8 000 - < 25 000	25 000 - < 50 000	50 000 - < 100 000	100 000 - < 500 000	>= 500 000	Total
LITHUANIA							
2011	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-
2013	-	-	-	-	-	-	-
2014	48	98	368	559	1156	16204	256
2015	152	469	1320	2197	4100	34734	804
HUNGARY							
2011	-	8	69	128	467	44179	605
2012	1	11	33	188	459	24379	404
2013	1	17	54	229	576	29247	478
2014	1	10	45	160	465	29860	469
2015	-	57	165	406	1190	39058	707
SLOVAKIA							
2011	x	x	99	182	1198	15311	3637
2012	x	x	168	277	1118	15321	3280
2013	x	x	73	135	888	15270	3905
2014	x	x	174	326	1935	28219	7354
2015	x	x	200	512	2059	34841	9078
CZECH REPUBLIC							
2011	x	36	98	270	1149	17228	2179
2012	x	19	45	135	495	9079	1061
2013	x	14	32	127	495	8845	1031
2014	x	36	63	226	834	16341	1896
2015	x	-	95	295	1178	25237	2899

Source: produced by EUFADN Database

It appears from the table that in the analysed period Lithuanian dairy farms received subsidies only in 2014 and 2015. Furthermore, FADN does not provide data about subsidies for dairy farming in the smallest economic size class (EUR 2 000 - < 8 000) in Slovakia and the Czech Republic or farmer's holdings in the EUR 8 000 - < 25 000 economic size class in Slovakia. In all countries an upward subsidy trend is observed in those farm groups in the periods when subsidies were received.

The calculation of the chain changes in subsidies for dairy farms showed that the largest increase in subsidies was in Slovakia in 2014 compared to 2013, when the level of subsidy increased by 88.32%. In the same year, the level of subsidy in the Czech Republic increased by 83.90%. In Hungary, the largest increase occurred in 2015 compared to 2014 (50.75%). In 2015 compared to 2014, subsidies for Lithuanian dairy farms increased by 114.35%. In 2012 compared to 2011, all countries experienced a reduction in the level of subsidy for milk production holdings: in the Czech Republic, Slovakia, Hungary, and Lithuania it shrank by 37.92%, 36.83%, 22.35%, and 11.24%, respectively. The above data reflecting a reduction in the subsidy level correlates with the trends in subsidies for livestock farming.

The analysis of the chain changes in subsidies for dairy farms by economic size classes showed that mostly the focus was placed on farms categorised in the economic size class EUR 8 000 - < 25 000 (except Slovakia because, as mentioned above, FADN does not provide data about subsidies for this farm class). The largest increase in Hungary and Lithuania was observed in 2015 compared to 2014, when the level of subsidy for farms in this class increased by 470.00% and 378.57%, respectively. In the Czech Republic subsidies for farms in this economic size class demonstrated the largest increase in 2014 compared to 2013. On the other hand, the most significant negative chain changes in Hungary are also seen in farms attributed to this class, where the reduction in 2014 compared to 2013 accounted for 41.18%. In Slovakia, the largest increase in subsidies for dairy farms was in farms in the economic size class EUR 50 000 - < 100 000 (141.48%) and the largest reduction was in farms in the economic size class EUR 25 000 - < 50 000 in 2013 compared to 2012 (56.55%).

The calculation of the base changes in subsidies for milk production, where 2011 is chosen as the base year, used data of three countries (Hungary, Slovakia and the Czech Republic) because, as stated above, there are no data regarding subsidies for Lithuanian dairy farms in 2011. In the analysed countries, data for 2015 stand out since an increase in subsidies for dairy farms was observed in this particular year: in Hungary, the Check Republic, and Slovakia they rose by

16.86%, 33.04%, and 149.60%, respectively. In Hungary and Slovakia, the largest decrease in subsidies for dairy farms was recorded in 2012 compared to 2011: 33.22% and 9.82%, respectively. The most significant decrease in subsidies for milk production holdings in the Czech Republic was seen in 2013 (52.68%).

The analysis of changes in subsidies for milk production holdings by farm economic size classes, where 2011 is chosen as the base year, revealed that the largest increase occurred in 2015 in the farms of Hungary attributed to the economic size class EUR 8 000 - < 25 000, where subsidies increased by 6.13 times. In 2015 compared to 2011, in Slovakian farms attributed to the economic size class EUR 50 000 - < 100 000 the level of subsidy increased by 1,081.32%. In the Czech Republic the largest increase in subsidies occurred in 2015 in farms in the economic size class >= EUR 500 000 (+46.49%). The analysis of subsidy reduction by economic size classes does not disclose any strong year or farm size related trends. The largest decrease in subsidies was seen in 2013 in Czech farms attributed to the economic size class EUR 25 000 - < 50 000 (67.35%). In Slovakia the largest decrease was in the same class and in the same year, although it was less significant (26.26%). In Hungary, the largest decrease in subsidies was seen in farms attributed to the economic size class EUR >= 500 000 (44.82%).

Data on subsidies for Lithuanian farms also have to be eliminated from the calculation of the average rate of change in subsidies for milk production holdings. In the analysed period subsidies for this type of production enjoyed the greatest increase, on average 26.69% per year. In this country, there is not one farm economic size class with a negative average rate of change, although it was exceeded only in one group, i.e. farms in the economic size class EUR 50 000 - < 100 000, where it was +29.51%. The lowest average rate of change was found in Hungary. It is also interesting to note that in this country the average rate of change by different farm groups varies significantly: the largest positive rate of change is seen in farms in the economic size class EUR 8 000 - < 25 000 Eur (+63.38%), whereas in farms attributed to the economic size class >= EUR 500 000 it is negative (-3.03%). On the contrary, in the Czech Republic, where the average rate of change in subsidies for dairy farms comes up to +7.40%, the largest positive average rate of change was seen in farms attributed to the economic size class >= EUR 500 000 (+10.01%).

In conclusion, it can be argued that data on changes in subsidies for dairy farms correlates with the trends in subsidies for livestock farming. The level of subsidy for milk production is growing although there is no significant gap or a farm group standing out in terms of subsidies.

5.3 The Influence of Political-Legal Factors on the Family Farms

Agricultural sector for its economic value (provision of the public with quality food, renewable energy resources, raw material in the textile, chemical and pharmaceutical industry) takes a special part in the EU countries' policy measures. In order to preserve agriculture as a business and farming traditions, as well as due to the importance of this sector for the prosperity of the population, the EU countries have implemented a variety of the EU CAP and national agricultural support measures. Some of them have a direct and indirect impact on the farm and rural prosperity.

The conditions of agricultural operators' activities are determined not only by political factors within the country or across the EU but by the worldwide trend, necessary to be analysed and evaluated (Melnikienė, 2012b). Therefore, considering the influence of political-legal factors on the prosperity of the farms, these policy issues should be highlighted separately:

1) Regulation of international trade of agricultural and food production;
2) The EU's Common Agricultural Policy (CAP);
3) National agricultural and rural development policy.

International trade regulation of the agricultural and food production. In recent years, the World Trade Organization (hereinafter – WTO) raises the question of market distortions, caused by the CAP by direct payments to farmers. The EU and WTO regularly negotiate liberalization of the foreign trade conditions, recognizing that the agriculture is one of the most sensitive sectors. Negotiations with WTO address the issues, connected to the destruction of the EU export subsidies, the EU domestic support for the agricultural sector and reduction of import duties. If these requirements of WTO would be implemented by the EU in near future, it would significantly impair financial position of small, medium-sized and large farms in Lithuania. According to the studies of economic viability of the farms, they are dependent on the direct support received and its withdrawal may negatively affect the resilience and prosperity of the farms.

Lithuanian agricultural and food products are mainly exported to Russia, Latvia and Germany (Lithuanian RDP 2014-2020). Latvian and German markets are regulated at the EU level, but Russian market is difficult to predict firstly due to political risk. Although from 2012 Russia is a member of WTO, its foreign trade policy and market protection mechanisms made Lithuanian agricultural and food exporters to face the market situation, dependent on the EU-Russia political arrangements. From August 2014, Russia introduced strict economic sanctions for the export of the main agricultural and food products from the EU to Russia. Undoubtedly, it will

have negative financial consequences for meat, dairy, fruit and vegetable sectors in Lithuania and other EU countries. Therefore, due to unexpected trade losses, the EU will not only need to review the legal regulation of the international trade of agricultural and food production, but also to provide additional measures that would offset the income loss for individual agricultural and food producers due to unexpected political risks.

The EU's Common Agricultural Policy (CAP). Within the period of 2014-2020 two main areas of support were included in CAP:

1) Support for agricultural producers through direct payments and market management measures, such as milk quotas, intervention in purchases and so on (1st Pillar);

2) Promotion of rural development in various targeted measures for agricultural competitiveness, environment and rural economic diversification and social life activation (2nd Pillar).

However, after the global financial crisis in 2008-2009, the limitation of financial resources for CAP and the increasing pressure from WTO encouraged the review of the EU agriculture and rural development support model. It is also a big burden on public finances of the majority of the EU countries or increased budget deficits in the EU member countries is pushing to do so. This deal brings huge pressure on public finances in most EU countries and/or increases the budget deficits in EU countries. Therefore, it is planned in CAP to increase funding for rural development and to reduce the volume of direct market-distorting agricultural support from 2014. The EU's main requirement is that the direct support to the farmers would not be linked to their production (Europos..., 2011). The decoupling of direct support from production is unfavourable for Lithuanian livestock farms, but contributes to the development of the crop farms. Lithuania managed to achieve higher direct payments in 2014-2020 rural development program, the 1st Pillar of CAP measures, while in the 2nd Pillar rural development measures are reduced. In order to mitigate the potential cumulative aid "imbalance" between the different branches of agriculture, Lithuania should significantly differentiate the EU structural support for agriculture, providing a different level of intensity of this support for crop and livestock farms.

An important role in the prosperity and resilience has been devoted to market regulation measures. However, under the new programming period, the CAP 2020, the framework of market regulatory instruments will be reviewed with the aims to remove most of the market-distorting regulatory instruments and to shift to supportive measures, mostly oriented to farm

operational risk. This risk is related, in particular, to climate change, plant and animal diseases, epidemics, management and etc.

Implementation of the national agricultural and rural development policy. Even before joining the EU Lithuania had already started to support agriculture so it could be better adapted to the requirements of the EU. The support has been implemented through direct payments (for crops, greenhouse vegetables, fallow and grasslands, starchy potato, livestock, organic farming and farming in less favourable lands) and compensations (interest subsidies, loan guarantees and insurance partial coverage, the availability of untaxed diesel fuel excise) (Lietuvos kaimo..., 2010). However, national farm support measures applied before joining the EU i.e., at a time when agricultural structure was dominant by small economy farms, underserved with agricultural production means, were not very effective. Small farmers were not able to restructure their farms according to the EU standards due to low production volumes and low net profits, they also lacked funds for farm modernization and increase of production volumes. This situation appeared from the restoration of Lithuania's independence, as the land restitution caused changes in the structure of land use. It significantly increased the number of land owners, and, as a result, the average farm sizes decreased. Many land owners live in cities and do not have opportunities to go back to farms, so they tend to rent their land to farmers. Land, rented by the farmers, accounted for over 57% of the total cultivated farmland in 2011 (Lietuvos kaimo…, 2014). Due to this reason, Lithuania is still unable to form a stable agricultural structure as it prevents the use of the EU support for the modernization in a number of farms, because they cannot ensure the long-term and stable use of agricultural land.

Since joining the EU in 2004 Lithuanian agricultural entities began to receive direct and structural support under the First and the Second Pillars of the CAP. Furthermore, in order to reduce the transition loss, while direct payments reached 100% of the negotiated level, farmers received the complementary national direct payments from the state's budget. These income support measures are especially important for small farmers, because due to non-compliance criteria, they are unable to take advantage of most of the structural support for the modernization and innovation at farm level. In addition, according to the EC state aid schemes in line, Lithuania may provide support for certain agricultural sectors from the state's budget. However, as outlined in the country's aid measures, its opportunities to support agriculture by state funds are limited.

Since the launch of the structural support measures in 2000 (SAPARD 2004-2006, SPD Priority 4, Rural Development Program 2007-2013), Lithuanian agricultural policy was focused on modernization and intensification of agricultural production. More than 11 thousand projects of the farmers, aimed for modernization of farms holdings, have been implemented, out of which nearly 90% – in 2007-2011. Thus, an average of 48 thousand EUR was assigned per project. 34 thousand EUR assistance on the average was devoted to set up a 2.8 thousand of young farmers' households (Lietuvos kaimo..., 2013). Country's households' capital, in particular modern agricultural machinery, increased with the investment support for farm modernization and the installation of financial engineering instruments from 2009, facilitating the borrowing conditions for farmers. In 2010, compared with 2005, the farm assets per 1 ha of agricultural land increased by 89.7%, while the assets per 1 SD – by 38.3% (Lietuvos kaimo..., 2014).

However, the attention has been focused on the upgrade of agricultural equipment. According to FADN data, it can be seen that investment in agricultural technique dominated in the structure of farm investments, accounting for 63% in 2010 (Lietuvos kaimo..., 2014). Meanwhile, the EU and the state support for implementation of the latest scientific knowledge and innovation has been used inefficiently.

6 GOOD PRACTICE EXAMPLES OF SMALL FARMS SUSTAINABLE DEVELOPMENT IN SLOVAKIA, CZECH REPUBLIC, LITHUANIA, HUNGARY

6.1 Good practice examples of small farms sustainable development in Slovakia

6.1.1 On the beginning vegetable farmer and nowadays famous poppy farmer and it is still H-Level

Bálint Pém can be characterized as an agro-manager who deeply enjoy to work in the agrarian sector. This is the reason for his approach to farming. His strengths are toughness and diligence, through which he overcomes all obstacles and take his business to the higher level. He considers himself to be a human who tries to perceive his work from above. He knows that if he wants to move forward, it is necessary to learn constantly. Bálint Pém prime seeks to learn from the best ones and therefore does not hesitate to invest in consultants who can provide him with lot of valuable information.

Already at the age of adolescence, he knew he wanted to be a farmer just like his grandparents. His family inherited a total of 7 hectares of agricultural land and a small settlement in Patince, which served as a starting position for his agribusiness. He started to grow vegetables and fruits with his parents, but now he recalls, with a smile, how he regularly traveled to FEM SUA in Nitra by his car with loaded trailer to sell the grown production to the then existing wholesalers on his way to school. After his studies, he began to specialize in the cultivation of early potatoes, Chinese cabbage, celery and so their family farm has grown to 15 ha. Over time, especially due to fluctuations in prices, they decided to expand their acreage and focus on the cultivation of market crops. He took the opportunity to submit a project to purchase agrotechnics from SAPARD program. His Project for 4 mil. Sk was approved, but his family did not have money for purchase. That is why he accepted the position of the main agronomist at the collective farm in Zlatná na Ostrove, and with the assistance of the collective farm was able to use the project and buy the technique. He held his position in Zlatná for 5 years, but at the same time he continued to work hard on the development of his farm with the distinctive name of SHR Bálint Pém, H Level. H Level means "high level", which was de facto the main credo of the farmer's work system. Bálint Pém was at the same time one of the main initiators of the foundation of the Association of Young Farmers (ASYF), where he became the first successful leader. After leaving Zlatná na Ostrove, he is fully devoted to his own farm, which has now grown to more

than 530 ha. Of this area, the latest 100 hectares are in conversion to organic farming. In Patince, they initially focused on the cultivation of market crops, but in recent years they have been trying to focus more on non-traditional crops such as mustard, facelia, lantern for seeds, peas and, recently, poppy seed has become the leader of crop rotation. The farmer and his wife are also linked to the finalization of production, and it must be said that they work in this area in a highly creative dimension.

As mentioned above, he gained a lot of experience as chairman of ASYF, where he got an opportunity to peek under the cover of the work of his young farmer colleagues in other EU Member States, which is another source of his business inspiration. To see how they do it in the West is constantly motivating him to innovate. Innovation is thus one of the main drivers of farm development. However, he does not forget the tradition and considers the mutual cooperation to be a key. He says that what makes their family farm special is tradition, innovation and collaboration. This includes as the main pillars of successful business the head of management of Patince. He greatly appreciates that his family, including his parents' generation, supports family business. For example, his father on the farm is literally a development engineer. The son comes with an innovation in agrotechnics that has the potential to make production more efficient and his father adjusts the available technology to his needs.

The choice of crop representation in the crop rotation is governed by his own methodology. As a rule, he monitors the five-year economic results for each crop, on the basis of which it makes a ranking of the efficiency of their cultivation, while the last two crops, which in this period achieve the worst results of crop rotation and replaced by others. Thus, for example, he has eliminated rape from the sowing process and then maize. In terms of farmer ranking, the most economically stable crop is durum wheat, which in the local conditions gives a regular yield over 5 t / ha. The poppy has some “current immunity” in the risk of falling out of the crop rotation. Bálint Pém widely diversified this crop. Part of the production is grown for the needs of the pharmaceutical industry, another part for consumption, while the poppy is harvested both machine and hand. Organic poppy has recently been added to the farm's portfolio. Poppy under the PEMAK brand can be found not only in the company's online store, but is also distributed to several stores throughout Slovakia specializing in farm products and healthy nutrition. The plan is to expand the range of products made from poppy in the cosmetics industry. Already today it is possible to buy specialties such as poppy chocolate and box of chocolates, which are all hand made products. For lovers of liquid drinks is available poppy wine. According to his words, poppy is an unexplored crop that has great potential for widespread use. It is currently facing the challenge of growing poppy in the organic farming system as effectively as possible. This is one of the reasons why they have been testing seeding of poppy for cover crops in Patince for several seasons, while one of the favorites could be a lantern. Since the farmer is not engaged in animal production, he considers that he could pellet the lantern in such a combination. Pea cultivation is also linked to the animal production. Bálint Pém delivers the pea to Hungary, where it is part of the new pig compound feed formulas, which show promising results in the form of up to 10% higher pig additions.

A progressive farmer considers the focus on organic poppy and its finalization a major goal for the future. Successfully built farm with more than 500 ha, from a few hectares at the beginning, undoubtedly offers him a decent credit to get the winning end also of the other creative business ideas currently waiting in a drawer of his office.

6.1.2 From ministry to vegetable farm

In the South of Slovakia, 15 km from the confluence of the Danube and Váh rivers the farm of the Cserge family is located. Zsolt has been interested in agricultural production since childhood, his first experience earned with agricultural work in the field of growing vegetables on arable land, later in fruit growing after the establishment of orchards.

After completing his studies at the Slovak Agricultural High School at Komárno, he completed his university studies in 2004 at the Slovak University of Agriculture in Nitra, on the Faculty of Economics and Management, in the field of study - Business Management. During his university studies, in 2000 he was employed in a vegetable production and sales association in Hurbanovo, where he was involved in coordinating the fulfillment of obligations in the framework of the sales of vegetable production by the members of the organization. In 2001 he became the coordinator of a project between the Kingdom of the Netherlands and the Slovak Republic, the subject of which was the establishment of a marketing and sales association of apple growers in Slovakia and the technological equipment of an agricultural company. From 2003 to 2009 he was employed by the Ministry of Agriculture of the Slovak Republic as the Chief State Counselor on the Plant Commodities Department, focusing on the common organization of the cereals market. After 2009, he worked in the private sector as a manager for the purchase of maize for processing units of an international company in Europe and in the field of trade in agricultural commodities until 2015, when he decided to settle with his family in his village St. Peter where he came from and set up his own agricultural business focusing

on special crop production. Since 2015, he has been an active member of the Association of Slovak Young Farmers - ASYF and assists young farmers in solving administrative and production issues.

He read about the published call for support for young farmers in 2015 on the internet and did not hesitate to prepare the application together with the business plan and the necessary annexes by himself and to submit to the Agricultural Paying Agency. The approval of the application for a non-repayable financial contribution created an ideal opportunity for Zsolt to contribute to generational renewal in agriculture, as his parents are already retired, and to modernize vegetable cultivation. He cultivates 14 hectares of agricultural land, of which 1,5 hectares are permanent grassland, 2,5 hectares of orchards with an assortment of apples, plums, peaches and apricots. The remaining 10 ha of arable land are cultivated with field vegetables, the majority of which are spice peppers and, to a lesser extent, green peppers, onions and Hokkaido pumpkin. Cultivation practices require Zsolt's precision and efficiency. Zsolt made the planting of seedlings that had always been very labor-intensive by purchasing a planting machine. Growing vegetables would be impossible without irrigation. In this respect, the farm has a great advantage, as there is a canal by the agricultural land, from which it is possible to draw quality water for irrigation. For this reason, Zsolt has invested in the renewal and modernization of the irrigation system, with which it can accurately dispense the amount of water needed. The aim of Zsolt is to minimize the use of plant protection chemicals, specifically pesticides, by providing an inter-row cultivator with fertilization. Given that arable land at the family farm site is used for conventional cereal and oilseed cultivation by large agricultural companies, the extension of the cultivation area is limited. For this reason, Zsolt sees the improvement of the vegetable area in the construction of a greenhouses, which he plans to cover an area of 0,4 hectares. Currently, Zsolt sells his

production directly to the fresh market, and in the case of spice pepper he has established cooperation with a large processor located near the farm. The area of processing own vegetable production is very interesting, and also the future challenge of the family farm, because in this form it is possible to create added value and achieve further economical and technological growth of the farm.

Starting his own business wasn't easy at all. The application approval process was time consuming and Zsolt had to cover the investments from its own financial resources. As a young farmer, with the confirmation of the approved non-repayable financial contribution, the financial institutions did not show any interest in lending, which further complicated the start of own farming. The goals and the associated tasks are clearly identified by Zsolt, as a young farmer he only needs strength, health and will.

6.2 Good practice examples of small farms sustainable development in Czech Republic

Organic Farm Nelepeč (Czechia) – adaptation and entrepreneurial spirit

Organic farm in Nelepeč has been hold by Kropáček family since 1991, when the family received back the formerly nationalized property. In the same year, the farming family started with transition of the farm to the organic regime and the farm has stayed in organic regime till now. In the beginning the family farmed with only 4 cattle, but it began to slowly expand. This gave the family again an opportunity to farm and to continue in the agricultural tradition dating back to the 17th century.

In the 1990s, the logical intention of the farmer's family was to expand the farm area to ensure a feed base for cattle. Nowadays, the main source of economic income comes from animal production (supported by farm's own plant production). Secondary source of comes from services (in plant production) provided to other farms which often do not have modern technological equipment, just like the farm of the Kropáček family. Mainly, the family members work on the farm, in the high season the family occasionally uses also temporary workers.

Currently, the farm operates on around 75 hectares and the crop composition is determined by needs of its animal production. Typical crops are barley, oats, clovers and grasses as well as potatoes or mustard which is plant as part of crop rotation and greening and as a complement to manure fertilization. Part of farm's plant production is also harvesting of fruit from own orchard. The farm's animal production is concentrated around milk production and which represents main income generating activity. The income that comes from meat sale is just a complementary activity. The farm breeds dairy cows (fleckvieh cattle). Currently there are around 50 cattle in the herd (30 dairy cows and 20 heifers). Bull calves are sold already after weaning period. In their strategic thinking, the farm owners, therefore, focus primarily on the dairy milk market. In the 1990s, the average annual yield per cow was around 3000 liters per cow.

However, during the time, farm succeeded and increased the yields and continuous attention (selection of heifers) is presently paid to gain higher yields, but with an emphasis on animal welfare. Currently, the average yield per cow is 350 liters of milk. It should be also mentioned that milk yield growth could be even faster, but there is intentional a very slow replacement process in the herd and some of the cows are older than 10-14 years. In recent years, the total annual milk production exceeded 150 thousand liters and the main buyer was the regional dairy processing factory.

However, the changes in the business environment have continually stimulated owners to adapt. One of the challenges was, for example, the fall in milk prices in 2009. Because until that this year, the farm had sold its milk at conventional milk prices. The change of buyer (switching to other regional dairy processor) in 2009 helped to stabilize the economic situation of the farm and thanks to the certification BIO (Organic production) farmers received a price premium for their milk (1 crown per liter premium). However, after a change in management at that dairy processing company, the price premium (0.25-0.5 CZK) per liter of milk was reduced and in the following years the selling prices again reached the same level as for conventional milk. This was despite the fact that all the requirements of the BIO (organic) certification were fulfilled and the produced milk had excellent purity and above average fat content (about 4.3%). This created an incentive to reevaluate the farm's strategy and explore other ways for further development of the farm, especially in terms of selling its milk production.

In that period, the owner's daughter, who completed university education, became more involved in daily routine on farm and as well as in management of the farm. She saw the future development of the farm in her own project of milk processing on the farm.

She initiated the establishment of small milk processing facility on the farm to process the milk and produce fresh cheese, cottage cheese, yoghurt, yoghurt drinks, etc. For these products, she managed to develop the market and stable sales. A key aspect of this success lay in the continuous effort to innovate the product and to differentiate the product portfolio in comparison to generic dairy products that can be purchased in a retail shops or in other farms producing dairy products at the farm. Customers can buy it directly on the farm, on farmers' markets, and a small proportion of production is also delivered to smaller shops in the region and to restaurants. Besides the traditional marketing tools, social networks (Facebook and Instagram) have become an important channel of communication with customers. The farm is

also part of the association (association of farm milk processors) and maintains contact with other producers. Members of this association meet regularly and they organize joint events - such as the cheese festival and the national cheese-making competition (this year also with the participation of farmers from Hungary, Poland and Slovakia).

A number of new small farm dairies have emerged in the Czech Republic in recent years, which raises questions about the saturation of this market segment and increasing competition among them. Nevertheless Nelepeč farmers are not afraid of competition. According to a young farmer, this market segment is not saturated and she also trusts to her ability to deliver unique products to the market. Her next goal is to reconstruct the cellar under the dairy into a facility for ripening of hard cheeses, because she also wants to produce cheese that matures for several months. This would also mean job creation for the people in the village. Overall, the farm aims to create its own and independent value chain.

6.3 Good practice examples of small farms sustainable development in Lithuania

6.3.1. The Only Organic Oilseed Crop Cultivation and Processing Farm In Lithuania

Edmundas Jastramskas' farm was established in 1989 under the Law on Peasant Farming. In order to adapt to the existing market conditions, which, at the time, were promoting the production of biofuels, farmer E. Jastramskas from Šventežeris, a village in Lazdijai District, decided to start pressing oil from rapeseed he was growing in his farm, which would not be used as food, but, instead, as biofuel for tractors. Although initially the initiative had proven to be good, subsequently it appeared that tractors that were used in Lithuania were not designed to use this type of biofuels due to filter clogging by the oil. Those problems motivated to focus toward biodiesel production technologies. Certain highly toxic chemical substances had to be added so that rapeseed oil could be used in biofuels and the farmer's family objected to such business.

Source:

Mano ūkis.lt. 2017-06-26, Ūkininkų gaminama ekologiška produkcija keliauja ir į užsienį, https://www.manoukis.lt/naujienos/maistas/ukininku-gaminama-ekologiska-produkcija-keliauja-ir-i-uzsieni;

Kaimas į namus: https://www.kaimasinamus.lt/ukininkas/jastramsko-ekologinis-ukis.288/

As the idea did not live up to the expectations, a sustainable farm was established in 2002 and in 2004 Ekologinis E. Jastramsko Ūkis (*Organic Farm of E. Jastramskas*) started its operations. In 2008, following verifications by the State Food and Veterinary Service and experts of the public institution Ekoagros, responsible for organic farming certification, the farm received all required permits for the certification of an organic rapeseed oil farm. It was the first organic rapeseed farm in Lithuania. The idea of the production of organic oil for a wider range of customers was supported by researchers of Aleksandras Stulginskis University (Agriculture Academy of Vytautas Magnus University since 2019), who suggested to cultivate safflower and to produce safflower oil.

In 2014, the farmer cultivated 140 ha of land. The farm grew different crops: rapeseed, safflower, gold of pleasure, soya bean (the latter has not been very successful so far due to a wrong choice of seeds suitable for the Lithuanian climatic conditions), seed flax, sunflower, mustard, and the future plans include hemp grown for fibre. Buckwheat and wheat were traditionally included in crop rotation.

The farmer sells oil products and all by-products: for instance, rapeseed oilcake is perfect animal feed, which is primarily bought by the neighbours and/or organic dairy farms. Organic rapeseed oil is a cold-pressed, mechanically extracted product without any chemicals added.

Oil has a short production cycle: the family members do everything themselves: they grow the crops, flail, dry, store them in bins, and sell the products to the consumers. The quality of the produced oil depends on the seed and therefore the farmers choose seeds very carefully: at first,

they sow a small quantity and then they taste the extracted oil themselves and choose the tastiest, and then those seeds are sown in the fields the next time.

E. Jastramskas (going on 80) is not the only one in the family who runs an organic farm. His son-in-law A. Kreiza, granddaughter Justina and grandson Linas (it has been agreed that the latter will inherit his grandfather's organic farm) are organic farmers, too. His son-in-law A. Kreiza is growing high-bush blueberries on a 20 ha farm. His grandson Linas (100 ha) cultivates mustard and sells mustard oil to cosmetics industry, while his granddaughter (100 ha) is planning to start production of organic groats. Since the family members own four farms, they have participated in EU and national rural development programmes, which have made a significant contribution to the farm development.

The family farm has a clear distribution of responsibilities. The owners of the farms are responsible for cultivation and production, E. Jastromskas deals with the rapeseed oilcake, the grandson is engaged in oil bottling, the granddaughter is in charge of the sales, while the daughter and the youngest granddaughter keep the accounts of all the farms. In addition to the family members, the farms employ two workers.

The products are sold at organic product fairs, mobile farmers markets, shops selling organic food, and health promotion centres; orders can be placed on the telephone and then customers come to the farm to buy the products they want. Since the production volumes are not large, the oil is sold in the local, Lithuanian, market although the qualities of the organic rapeseed oil have also been positively evaluated by German researchers. Furthermore, the farmers are not seeking cooperation with supermarket chains, which often offer unfavourable conditions to the producers. Organic oil is distributed to the customers every 2 weeks, depending on oil production (the extracted oil has to stand before it is bottled) and consumption time (linseed oil should be consumed in one month and rapeseed oil in six months) and with respect of the exact number of consumers.

Initially, when the farm was established, the oil was sold at EUR 0.60 per litre. With due account of all the costs (production, glass bottles, labels, etc.) and the unique character of the certified products, now the oil costs EUR 4.67 (0.75 l) or EUR 2 (0.25 l). Even with rising product prices, the most faithful returning customers remained. Moreover, organic oil is highly appreciated by health-conscious people and people with health problems.

Talking about information on the internet, it should be noted that it has a great impact on the customers' choice. According to the farmers, misinformation about toxic materials in rapeseed

oil resulted in lost sales, but thanks to scientific explanations and the quality of the product the demand recovered.

Farmer E. Jastramskas is always happy to consult everybody who wants to start oilseed extraction.

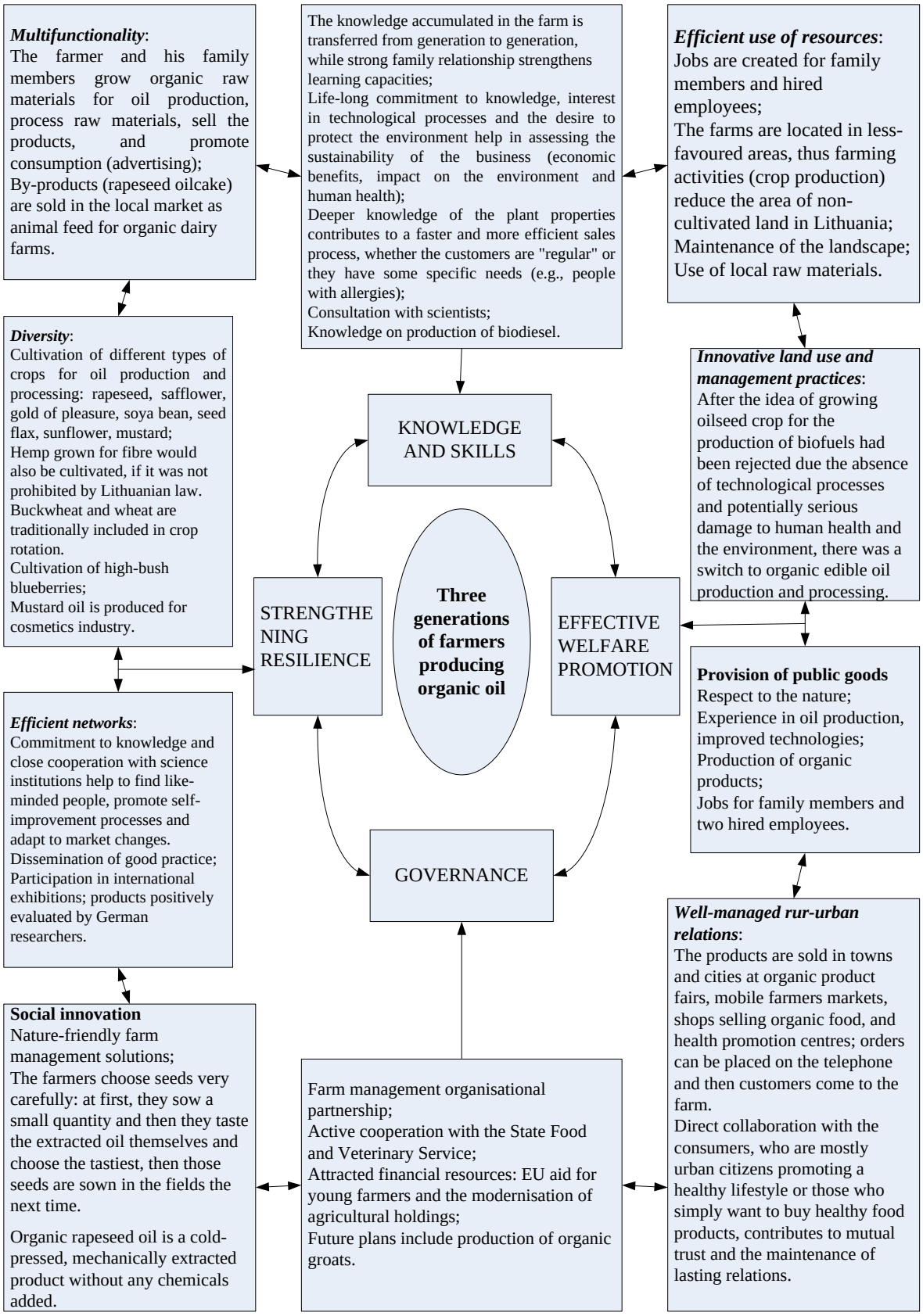


Figure. The scheme of three generations of farmers producing organic oil

Summary. This case study demonstrates that life-long commitment to knowledge, interest in technological processes and the desire to protect the environment led to a correct choice of the production activity. Furthermore, deeper knowledge of the properties of plants used for oil production contributes to a faster and more efficient sales process, whether the customers are "regular" or they have some specific needs (e.g., people with allergies). The close connection among the family members representing three generations promotes efficient work-sharing and the pursuit of mutual interests (profit, environmental protection, human health). Direct collaboration with the consumers contributes to maintaining market positions, especially in view of the fact that the market is very limited and specific. Dissemination of knowledge and close cooperation with science institutions help to find like-minded people, promote self-improvement processes and adapt to potential market changes.

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6.3.2. Mobile Small Farmers Markets in Lithuania

Mobile farmers markets got started at the end of 2008. Since 2009, an agricultural cooperative *Lietuviško Ūkio kokybė* has taken charge of their development. In 2014, there were 40 mobile farmers markets in Lithuania (25 in Vilnius, 14 in Kaunas, and 1 in Šiauliai). 193 producers, of which 81.9 percent were farmers or bee-keepers, sold their products in those markets. Most of the products they sold, approximately 50 percent, were various vegetables, fruit and berries. In collaboration with the Lithuanian Farmers' Union and the Lithuanian Family Farmers' Union the market initiative spread to other Lithuanian towns and cities.

In 2008-2009, low commodity prices, farmers' desire to maximise their profits, overcrowded traditional markets and numerous cases of abusive behaviour of supermarket chains with respect of the farmers were found to contribute to the emergence of mobile farmers markets. All the more so as the primary producers gain the smallest share of the added value created by the final product. Therefore, the initiative of a project promoting entrepreneurship among communities and farmers aims at activating links between farmers and consumers, i.e. trust in one another in terms of a fair price and a good product quality.

Legal documents prescribe that only producers and/or their employees, who sell the products produced by farmers, bee-keepers or gardeners, can trade in the mobile farmers markets, i.e. a short food supply chain shall ensure a close contact between the producers and consumers, without any intermediary intervention.

The initiative group is actively cooperating with the Ministry of Agriculture, the State Food and Veterinary Service, and local administrations. Thanks to close cooperation, mobile farmers markets comply with all the rules on food safety and hygiene, where some stakeholders implement the requirements while others mentor and advise. Furthermore, the stakeholders monitor the compliance with the standards (regulation and food safety and hygiene requirements) themselves. The farmers take control so that the consumers were provided by high quality products produced by the farmers. In 2011 there was a situation when a breach of the regulation was noticed at a mobile farmers market, i.e. a reseller was trading in food products other than those produced by farmers and consequently the reseller was forced out of the trading venue. Now and then consumers doubt whether the products sold at the mobile

farmers markets are produced by a farmer and that being the case a self-control system has been introduced to guarantee the authenticity of the origin and the quality of the product, which is adopted by all producers engaged in fair trade.

The key challenges faced by the producers of added-value products include the lack of a tradition (it is easier to sell commodities to processors than to use them to produce value-added products, such as cheese, curd, jam, juice, etc.), the lack of material resources, the shortage of workforce, the lack of investment, and fear of seeking support from the authorities.

Further to assessing the challenges faced by the farmers, the initiative group decided to facilitate direct cooperation between consumers and producers in order to maximise benefits for all stakeholders, including the consumers, producers and authorities: outlets for products, market share and profits for the producers, high quality, healthy products that meet expectations and that are sold in convenient venues for the consumers, and intensification of small producers', whose numbers are rather significant in Lithuania, business, a potential institutional support in terms of education rather than finance (help in seeking certification, information on required documents and requirements, etc.) for the authorities.

When people buy at mobile farmers markets, they offer positive or negative feedback on the products and suggest what should be changed, which leads to friendly relations and a better taste of the products.

Mobile farmers markets lead to close relationships between producers and consumers and activate trade. However, since 2013 it has been noticed that the numbers of consumers have not reduced, if not increased, but the quantities of products they buy have decreased. This can be explained by the fact that the buyers at the mobile farmers markets are mostly people at the retirement age, who want high quality and healthy food, but their income is lower and thus they cannot afford larger quantities of products, whereas representatives of younger generations prefer shopping in supermarkets. Another group of consumers shopping at farmers markets includes people who prefer to give healthy and nutritious food to their children. Although most customers are returning, their numbers are still insufficient and therefore market managers seek to attract younger consumers by cooperating with supermarkets, which have *Linkėjimai iš kaimo* (Best Wishes from the Village) sections in 6 Maxima supermarkets, and *Vikis* sections in Rimi supermarkets. Apart from attracting larger numbers of consumers, this initiative is benefcial for the producers, who can offer a bigger range of products at such supermarket sections because the transportation costs become lower and there is a greater likelihood that fresh products will be sold and they will not get spoiled.

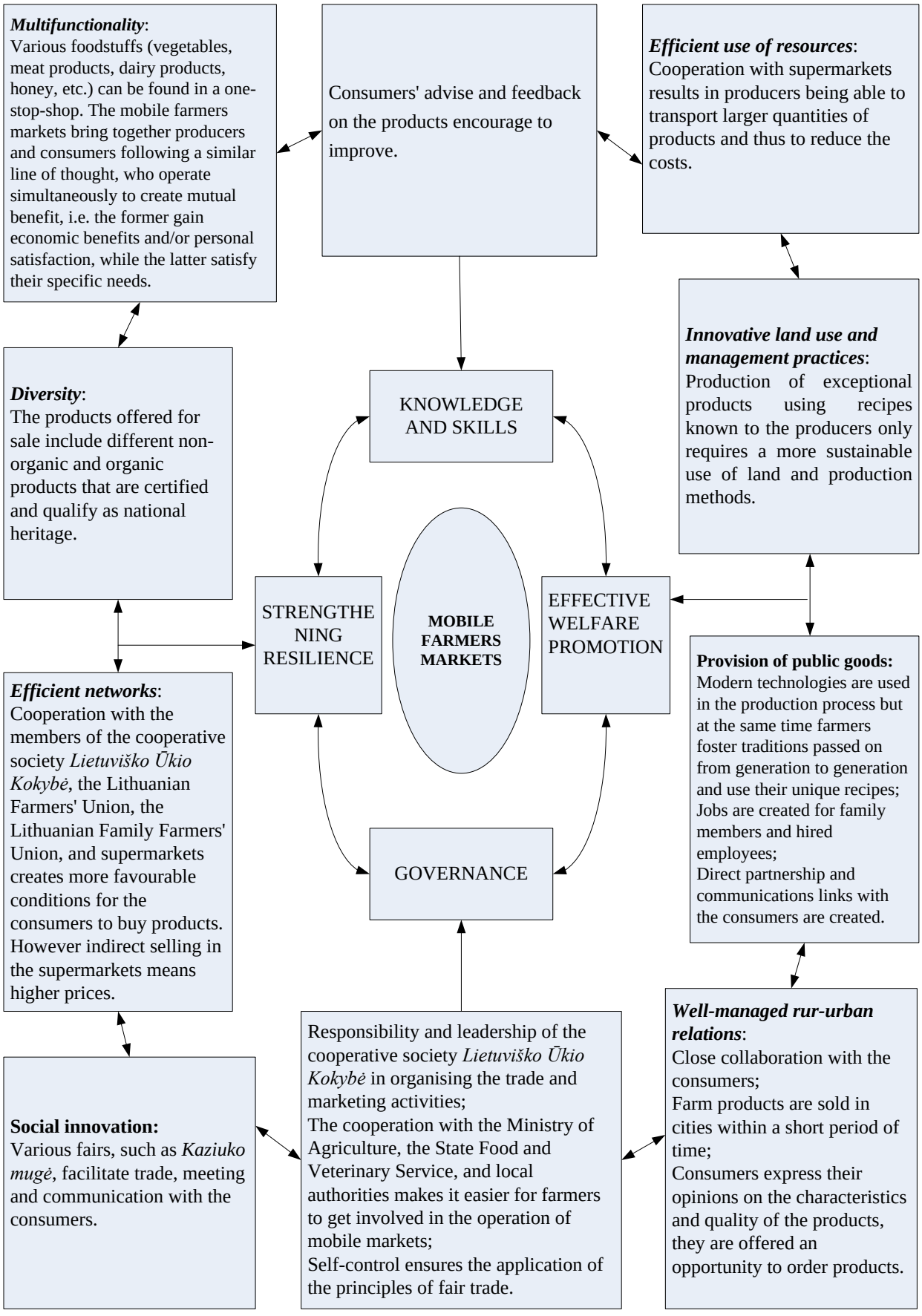

Figure. **The scheme of Mobile Farmers Markets**

The product portfolio at the mobile farmers markets is increasing, cutting edge technologies are used in their production processes, but nevertheless the farmers keep to unique ancient traditions and use recipes that are known to nobody else but them.

Consumers have noticed that prices in Vilnius mobile farmers markets are higher than in Kaunas, which can be explained by the fact that in Vilnius vicinities there are less vegetable producers and there are no farming traditions.

Farmers, who sell their products at the mobile farmers markets, often participate in various fairs, such as *Kaziuko mugė*, where they find new consumers.

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6.4 Good practice examples of small farms sustainable development in Hungary

6.4.1. The farm has a history of three generations

37-years-old Zsolt Hegedűs farms in Danube –Tisza Interfluve, in Kecskemét, Bács-Kiskun county. His activities include plant cultivation and animal husbandry. The former comprises of growing maize, wheat, sunflower, foxtail millet, Sudan grass, sorghum and alfalfa. His farm also owns a pasture. The area of the plough land is a total of 350 hectares, half of it is owned by him and the other half is rented. Plot sizes are varied, the smallest is 1-2 hectares but there is also a contiguous plot of 10 hectares.

He mainly raises cattle comprising of 120 specimens in the framework animal husbandry. The stock consists of one own bull for breeding, cows, and 20 animals for population growth (calfs and heifers). Rotation is done at 400 kilograms.

He also had 80 bulls but keeping them was not profitable with such a low population. 400-500 are needed to make it worth keeping them.

They also have poultry. Pullet hens of 12 weeks are reared for sale, 5-6 rounds for a year, 5000-6000 pullets are in a tent. They also have 3000 pre-reared chicken, too, rotated every weekend. This kind is sold for half a year. They also sell chicklings for half a year, approximately 3000 per year, but these are bought from a company and passed on.

The farm has a history of three generations. It was started by his grandfather in the early 1990s. He had 11 brothers, therefore he asked their help and bought 80 hectares of land. He has established the basis of the farm. At the beginning, his grandfather did not buy machinery. The next generation, his father – who was otherwise a carpenter by profession – recognised that it is not worth to make others cultivate the farm because the money spent on services depletes profit. Therefore his father decided to leave carpentry and buy machinery, first a tractor, a trailer, a disc harrow and a plough and he started to participate in farming. When he bought machinery, he always invested in the cheapest.

After graduation, in 2001, Zsolt had to decide whether he wanted to farm because otherwise he wanted to become a car mechanic. His granparents and parents tried to lead him to the

recognition of how important would it be for them to continue what they had started. They did not force it, but they suggested that their work will only have meaning if there is someone to carry on with it. At that time, many of his counterparts tested their fortunes abroad but he was never the type who could leave his home country. He recognised even then that energy invested in farming can have many opportunities for development. Therefore in 2001, he agreed with his ancestors, enrolled in the university of Gödöllő and got a diploma as an agricultural engineer specialised in animal husbandry. During his last two years at the university, he was preoccupied with tasks at home, even this period was spent with work. This was when he started the farm on the path of cattle husbandry. First, he bought 1-2 cattle for beef. These animals had an important role in selling the fodder. One of his friends said that "he packs the fodder into skin."

A lot of second-grade produce can be fed by the cattle and the current stock of 120 cattle is of great help in nutrient supply – manure. It would be worth keeping them solely for this. He also recognised it early that it is a great advantage for funding applications if someone keeps animals. In 2007, he wrote his application with the help of his family for funding supporting the set-up of his businesses. After winning it, in 2009 he became a private entrepreneur and a separate branch at the farm. He started farming on 40-50 hectares. At first, he rented land from his acquaintances and by the heritage from his granparents, the size of his estate grew bigger. He had a low point in 2009-2010 when he recognised that the loans he accumulated endanger his farm but he did not give up because he saw that there will always be a problem and it will be solved if one acts. Although being forced to do so, but he must continue and actually the launch of his farm was much harder. This approach was taken into high regard by banks, too.

Hideous debates spring up in family farms about "how to do it". The goal is common, the question is how we achieve it. "It is like having three captains of a ship and all three of us would do it differently." In many cases, debate makes the handover of the farm harder. For example, if one decides something and carries it through but does not achieve the expected successes, the one who made that decision will be blamed. Yet, there is a limit that one does not cross. In this profession, one is both leader and decision-maker, setting the future of one's own family with his or her choices. Azonban van egy határ, amit nem lép át az ember. Ebben a hivatásban egyben vagy vezető és döntéshozó, a családod jövőjét határozod meg a döntéseiddel. Zsolt reckons that there are a lot of variables in farming based on which a decision has to be made. While debating, both he and his father line up their arguments and

whoever lets go first, the will of the other one prevails is based on that.

His father thinks that “a bit of luck is always necessary for life!”

Currently, they employ 8-10 people full-time and 4-5 people seasonally. They listen to the opinion of employees when they make decisions. They keep track of innovation, they see the new methods but the pens are not automated at the farm. Many economic questions are raised by him such as whether it is worth investing in that. For example due to the circumstances regarding their land, they cannot produce the quality and quantity of produce than on the soils of Hajdúság.

It was hard for him when he was choosing a partner to find someone who accepts his job and the lifestyle it requires. He managed to do so, his partner manages the chicken business at te farm. She also won a young farmer grant. During the years, they have recognised that chicklings are less marketable because household poultry husbandry is dying out, it is more profitable to work with egg-laying hybrids.

They have three sons and hope that if the children will be mature enough, one of them will carry on with the farm.

6.4.2. Agriculture is not a job, it is a lifestyle

András Takács is a 39-years-old farmer who is cultivating in Northwestern Hungary, in Szákszend, Komárom-Esztergom county. The farm has 600 hectares of owned and rented land which is not contiguous but divided into parts. The smallest plot is 0.5 hectares, the average is 7-8 hectares but there is one sized 30 hectares, too. Maize, wheat and sunflower is cultivated. Beside that, they also do wagework on 300 hectares as full and part-time service.




András graduated from Sándor Jávorka Agricultural Secondary School. His parents did not do any agricultural activity but they worked for a company where András was able to gain more knowledge on agricultural machinery, providing a good basis for his career choice. He got close to the farming lifestyle thanks to his wife and her family and got into the family business. His father-in-law started to build up the farm in the mid-90s from 60-70 hectares that he has been continuously expanded.

In 2002, his father-in-law asked him the question whether he is interested in agriculture and if yes, would he like to do this activity. His father-in-law also told him what he can expect if he says yes. András decided that he wanted to help because agriculture is close to his heart so he immediately said yes and became an active actor of the farm.

In 2007, he applied for young farmer business set-up support and based on that, he became a young farmer in 2009. Therefore in spring 2009, he became a private entrepreneur and in 2010 switched to a limited company as the main profile but being a private entrepreneur as a form

of business is also valid in parallel. András is the CEO of the company and they employ 4 people. Although András does not have a diploma, he started to learn this activity by the side of his father-in-law, therefore he has 15 years of practice. Cultivation on open fields is under his management at the farm.

Every year is different in agriculture, every year bring new experiences development is continuous to this day. Everything is talked over, coordinated with his father-in-law. He dares to say that while his father-in-law is alive, he will influence day-by-day business. It was very hard for him to get used to that things are not as handy as for his father-in-law which was a source of many arguments. Therefore András rather asks the question for his father-in-law at the beginning of the process what he wants and after the answer, he tells him that the result will be that, he should not care about the how. Their mentality is not radically different. "I do not grab the hammer by its head."

Strong trust has been established with his father-in-law. András feels it often that his father-in-law is happy that he is present at the farm and takes care of a lot of things instead of him, it is not him who has to struggle with those.

Innovation is heavily emphasised. He reckons that it always implies progress. They have a common practice about it, András always writes down his calculations on graph paper and shows them to his father-in-law. Serious development has been started in 2002 on this field at the farm that is still present today, there are a lot of experiments. They develop according their own practical experience, considering that it should be an economically sound, profitable investment. The machinery is available for every step, sowing and fertilizer application is directed by GPS.

They cannot finance everything on their own, therefore they have debt at a level that is sustainable by the farm. Their development was also aided by grants.

The financial aspect of the farm is managed by his wife as an accountant. They have a daughter of 10,5 years and a 13-year-old son. The girl is small, she is very much interested in hunting. Their son is interesting, sometimes he is in the mood to carry on with the farm but sometimes he prepares himself for a completely different field. They do not want to force them to hand the farm to them, they will provide the offer of free choice for them.

According to András, agriculture is not a job. It is a lifestyle, a call that has to be taken seriously. He hazards the opinion that a kind of fanatism is needed for it. It must be decided whether I do it or not. That is the basis for the whole thing.

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8 GLOSSARY OF KEY TERMS

AVERAGE FARM SIZE it corresponds to utilised agricultural area divided by the number of holdings.

SUSTAINABILITY - the quality of being able to continue over a period of time; the idea that goods and services should be produced in ways that do not use resources that cannot be replaced and that do not damage the environment [35];

SUSTAINABLE DEVELOPMENT is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" **(**World Commission on Environment and Development, 1987)[36].

SMALL FARMS indentified according *the structural conditions* e.g. farm size (land area, labour units, production size, economic size, etc.); *non structural conditions* e.g. risk of poverty, lack of opportunity, more autonomy. Small farmers are not a homogeneous group: they range from middle class individuals who are well integrated in the market to poor subsistence farmers; they have different backgrounds and pursue diverging interests; the most commonly used parameters to define small farms are physical size, economic size, and labour input.

FAMILY FARMS indentified according: social relations e.g. family and relatives; farm succcession e.g. generational transfer. Its main source of labour – family farming.

SUBSIDIES - are current payments by the general government or European Union institutions to resident producers that are not required to be reimbursed. The overriding goal is to influence levels of production or prices, or to compensate producers for production costs.
Subsidies are broken down into two main categories:

- subsidies on products and

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- subsidies on production.

(Eurostat statistics explained (http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Subsidies))

ECONOMIC SIZE OF THE HOLDING - the economic size of the holding shall be determined on the basis of the total standard output of the holding. It shall be expressed in EURO.

ECONOMIC SIZE CLASSES OF HOLDINGS - holdings are classified by size classes, the limits of which are set out below:

Classes	Limits in EURO
I	less than 2 000 EURO
II	from 2 000 to less than 4 000 EURO
III	from 4 000 to less than 8 000 EURO
IV	from 8 000 to less than 15 000 EURO
V	from 15 000 to less than 25 000 EURO
VI	from 25 000 to less than 50 000 EURO
VII	from 50 000 to less than 100 000 EURO
VIII	from 100 000 to less than 250 000 EURO
IX	from 250 000 to less than 500 000 EURO
X	from 500 000 to less than 750 000 EURO
XI	from 750 000 to less than 1 000 000 EURO
XII	from 1 000 000 to less than 1 500 000 EURO
XIII	from 1 500 000 to less than 3 000 000 EURO
XIV	equal to or greater than 3 000 000 EURO

The rules laid down for the application in the field of the farm accountancy data network and the Community surveys of agricultural holdings may provide that size classes IV and V, VIII and IX, X and XI, from XII to XIV or from X to XIV are grouped together (COMMISSION REGULATION (EC) No 1242/2008 of 8 December 2008 establishing a Community typology for agricultural holdings (Consolidated version: 01/01/2010))

9 Annexes

Annex 1.

Crop output, mln. Eur

geo\time	2012	2013	2014	2015	2016	2017
EU (28 countries)	214556	219616,8	213264,2	215145	210000,5	214291,6
Czech Republic	2849,85	2919,75	2885,34	2742,58	2952,04	2659,9
Lithuania	1833,8	1617,8	1572,25	1801,7	1631,67	1669,37
Hungary	4339,45	4595,95	4712,03	4682,15	5014,51	4790,87
Slovakia	1195,8	1210,88	1273,13	1126,96	1364,46	1219,99

Animal output, mln. Eur

geo\time	2012	2013	2014	2015	2016	2017
EU (28 countries)	167961,5	172638,4	172827,2	165018,7	160180,4	176234,2
Czech Republic	1790,03	1805,05	1871,83	1702,61	1682,95	1851,29
Lithuania	917,4	988,5	977,03	862,36	836,61	974,01
Hungary	2637,52	2670,8	2707,76	2760,11	2693,29	2834,58
Slovakia	959,27	952,11	871,31	766,73	786,76	805,69

Output of the agricultural industry, mln. Eur

geo\time	2012	2013	2014	2015	2016	2017
EU (28 countries)	416677,9	427786	422330	416903,9	406132,8	427414,2
Czech Republic	4860,58	4935,79	4976,1	4711,15	4918,12	4795,77
Lithuania	2972,9	2855,9	2805,94	2971,81	2834,78	3024,42
Hungary	7498,53	7810,54	7957,04	8021,95	8308,99	8245,39
Slovakia	2397,06	2406,96	2391,81	2160,67	2391,1	2262,49