INSTITUTE OF AGRICULTURAL AND FOOD ECONOMICS
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Economic, social and institutional factors in the growth of agri-food sector in Europe

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COMPETITIVENESS OF THE POLISH FOOD ECONOMY UNDER THE CONDITIONS OF GLOBALIZATION AND EUROPEAN INTEGRATION

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The purpose of the study is to analyse the issues of economic, social and institutional factors in the growth of agri-food sector and the development of rural areas in Europe. The authors of chapters included in this volume try to answer the questions concerning above-mentioned phenomenon on the basis of experience of selected European countries.

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Foreword

The main agricultural functions associated with food production are becoming implemented more by not by agriculture itself, as much as by the complex of operations involving various factors and conditions independent of agriculture. The global experiences show that the developmental capabilities of agriculture are becoming less dependent on the endogenic conditions of this sector, and more dependent on sector policy, particularly macroeconomic policy. The development trends of the entire economy have significant meaning to the competitiveness of the food sector. The negative macro-scale results impact agriculture and its surroundings. The GDP drop limits the income of the population, which in turn entails reduced demand for food products. The agricultural economic condition is an integral part of the general economic condition, as well as its derivative.

This way, the social interest area covers not agriculture itself, but rather the entire food economy and its operating conditions, both within the country as well as in a regional or global depiction. This means that the economic development and formation of agribusiness reduces the role and significance of agriculture, and creates pressure on the agricultural and food economy to adapt to the new needs and conditions.

Economic development is beneficial to progress in the fields of genetics and biotechnology, as well as the widely understood technology (mainly IT), and creates a breakthrough in agriculture and the use of its products. Technical progress creates possibilities of not only the automation of agricultural technologies, but also recognition of the environmental conditions and progress of the biological production processes, quality of the agricultural raw material, and the processing and storage conditions of the products.

The combination of the automation of the biological processes of agricultural production and the automation of recognising their progress and capabilities of intentional service provides opportunities of significant, even revolutionary changes to the organisation and economics of agriculture. These changes will certainly be bound with mutual influence with economic events and market operations, but most of all they will create significant structural transformations in the agricultural community, and in effect in the agrarian structure.

The historical experiences indicate that even though agriculture is entering the global economic crisis with a certain delay, it takes longer to escape it, and the economic and social effects can be more severe. Thus, institutions, as well as active economic policy are even more important during such periods.

The book consists of 23 chapters prepared by representatives of 14 of the following research centres: Institute of Agricultural and Food Economics - National Research Institute in Warsaw, Poland; Research Institute of Agricultural Economics in Budapest, Hungary; Kazan (Volga Region) Federal University, Russia; Odessa State Agrarian University, Ukraine; Bucharest Institute of Agricultural Economics, Romanian Academy; Lithuanian Institute of Agrarian Economics in Vilnius; Sogn og Fjordane University College in Sogndal, Norway; Centre for Economic Development, Transport and the Environment in Helsinki, Finland; Czech University of Life Sciences in Prague, Czech Republic; Institute of Agricultural Economics in Belgrade, Serbia; Centre Economique Rural en France; Institute of Farm Economics, Johann Heinrich von Thünen-Institut in Braunschweig, Germany; University of Banjaluka, Bosnia and Herzegovina and Agricultural University in Plovdiv, Bulgaria. The authors of respective chapters are focused in the issues of economic, social and institutional factors in the growth of agri-food sector and the development of rural areas in Europe.

The authors of chapters included in this volume try to answer the questions concerning above-mentioned phenomenon on the basis of experience of selected European countries.

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1. Institutional restrictions concerning growth and development of Polish farms

1.1. Introduction

Institutions are understood as all forms of restrictions created by communities to shape the desired behaviour of individual persons; some of those restrictions are formal in nature, e.g. legal standards. This also concerns farm producers. With the accession of Poland to the European Union, Polish producers were included in the system of new institutions, whose aim is to strengthen the economic situation of farms they own, limit the negative impact of production on human health, preserve biodiversity and landscape, and improve animal welfare.

Under the influence of those institutions, processes of growth and development of farms have been taking place in national agriculture. It is generally known that growth consists in increasing the outlays of production factors, which makes it mainly quantitative in character. Development, on the other hand, is a broader concept; apart from quantitative changes, it also covers qualitative ones, e.g. improvement in the outlay-product relation. Thus, development is related to various kinds of progress.

As a result of agricultural growth and development processes farms have become much more diversified. The following kinds of farms have evolved as a result of these processes:

- leading farms, also referred to as the developing farms,
- farms with potential development abilities,
- problem farms and farms at risk with limited development abilities,

Work on the European Union budget for 2014-2020 is currently underway. The level of support for Polish agriculture will depend on it. Moreover, due to the increasing income in agriculture there are discussions of introducing income tax for farms and altering the social insurance system for farmers. Apart from that, milk quotas will no longer be in force from 2016, and from 2017 the import of genetically modified soy pellets may be prohibited, which will of

course have a negative impact on the income of farms. The aim of the present study is thus to discuss the economic effects of forecast and planned institutional changes in agriculture by 2020.

The study started with transferring the performance results of national agriculture for the 16 years between 1994 and 2010 to 2013. This was done using the projection method. Gross value added was used as a category for the assessment of results, calculated as difference between income with additional payments and the production of a particular kind, and costs. To calculate the value for the individual types of crop production in 2013, the models for crops, total planted area and product prices were used, while for the types of animal production - the unit productivity of animals, production volume or animal populations and prices of the main product. In order to characterize the cost items, the models of prices of particular production resources and the amount of expenditure were used.

After 2004 Polish agriculture has undergone changes which have had an additional impact on the amounts of gross value added, but were not manifested in the initial projection. These include the economic effects of the observance of norms defined by the principle of mutual compliance (good farm culture, protection of the environment, animal welfare, etc.) by farms using direct payments. The initial projection was corrected with reference to the estimated effects of actions undertaken in farms in order to fulfil the requirements defined by those norms.

The details concerning the method used for drawing up the projection of gross value added for 2013 were presented by W.Jóźwiak in a report presented during the Institute conference in Kazimierz Dolny at the beginning of June 2012. That methodological issue is therefore not discussed in greater detail in the present study, and those interested in it can read the study of W. Józwiak, G. Niewęgłowska and K. Jabłoński „Taking care of environment and animal welfare with reference to the economic results in agriculture", published in the materials from that conference.

Projection of value added and such issues as the advancement of works on environmental protection are not of great interest for the public opinion. Especially strong emotions are caused by direct payments and the related growth of income for farms. Along with that there are ideas concerning the revision of social insurance rates for people who work on farms owned by natural persons and the reform of the farm tax system which may be carried out in 2014 or during the next six years of the new financial perspective of the European Union. This will go along with the decrease in farm income caused by the liquidation of dairy limits in 2015 and the results of the expiry of the moratorium for the import of soy pellets from genetically modified plants (the so-called GMO soy pel-

lets) by the end of 2016. Each of those regulations may have its individual meaning but together they can pose a threat for the future of national agricultural development. The estimates cited in the literature concerning the results of this kind of threat were thus put together in order to take a position on the issue of state of national agriculture and national farms in 2020.

To achieve this aim the vision approach was applied. According to Jan Szczepański,[1] it is a comprehensive "... picture /of a certain fragment/ of reality, in which the scientific and ideological factors are ... subordinate to emotional issues, non-verifiable elements which nevertheless mobilize individuals and groups /people/ to act decisively and intensively".

1.2. Changes in the structure of farms before 2004 and after 2004

The analysis of the results of the agricultural national census from 1996 and 2002 shows the advancement of the polarisation of farms. It is estimated that in 2002 about 6% of farms of the area of 1 ha of agricultural land and more were characterized by a wider reproduction of assets, and they were the only ones to have increased their share in national commodity agricultural production. They used 42% of area of agricultural land, which means that those were larger farms. This group mainly included individual farms specialised in fruit, vegetables, milk and the production of slaughter animals of particular species. However, only about 25 thousand of individual fruit-growing enterprises (1.2% of the total amount of farms of the area of at least 1 ha of agricultural land) had additional income per unit of own labour input at the parity level or higher. They provided about 3% of the national value of agricultural production.

After accession to the European Union, the number of farms capable of development increased considerably. The numbers provided in the table show that the share of farms which are distinguished in their size group by the highest productivity, the payment of own labour input at the parity level and the profitability of equity capital (land and other tangible assets) equal or bigger than the profitability of capital investments (leading farms) was small (about 2%). Farms with development potential had a greater share (about 36%); they differed from the leading ones only by a lesser (by 0.1 to 5%) production efficiency. On that basis, the number of developing and potentially developing farms was estimated at 295 thousand. Their share in the total number of farms owned by natural per-

[1] See chapter: About the need and rules of creating the vision of Polish country, joint publication J. Wilkin [2005].

sons with an area of at least 1 ha of agricultural land was thus 16.6% and they provided about 64% of the national value of agricultural production.

Table 1. The structure of farms owned by natural persons (%) which are distinguished by the size, efficiency and profitability of equity capital at the market level (the average from 2005-2007)

Groups of farms	Size of farms in ESU		Average
	2 – 8 ESU	8 and more	
Leading	1.7	1.8	1.7
Potentially developing	25.4	61.0	36.4
Problem and endangered	72.9	37.2	61.9
Total	100.0	100.0	100.0

Source: own calculations on the basis of the calculations of M. Zieliński and J. Sobierajewska prepared on the basis of data taken from the Polish FADN.

The numbers which characterise the variety of farms before and after accession were not calculated using an identical method, but it was similar. They show a great increase, as compared to the period before accession, in the number of farms which are distinguished by their capacity for development and sustainability.

Table 2. The change of productivity of indirect use costs in Polish agriculture in 1998 – 2010 (in terms of fixed prices of 2003)

Specification	Amounts in PLN million in:		1998
	1998-2002	2006-2010	– 2003=100
Total production	52852	59751	113.0
Indirect use	34685	35482	102.2
Relation of the production value amount to direct use (%)	152.4	168.4	110.5

Source: own calculations based on J.Buks' study on the basis of data taken from the economic accounts for agriculture (RER).

The productivity of direct use costs also improved. The numbers in Table 2 show that this phenomenon was caused by a slower increase in the volume of these costs than the increase of volume of production obtained.
Thus it can be seen that the changes which occurred in Polish agriculture after accession as compared to the previous period are mainly of qualitative in nature, which shows that national agriculture was developing during that time. That development made it possible for management efficiency to improve.

1.3. Projection of farm income for 2013

The projection of income prepared for a particular year is a result of the average account prepared on the basis of trends for many years. It can be seen from other premises that it should be viewed as an average from several years, most preferably three years. In this particular case when the projection for 2013 is mentioned, it should be understood that it concerns average numbers from the years 2012-2014.

The numbers in Table 3 show that the value of production calculated in current prices will increase in 2012-2014 similarly to the costs of indirect use calculated in the same way, and this phenomenon will take place along with the increase of gross value added by 17.4%. This growth calculated in fixed prices will be even 1.1 percentage point greater and will amount to 18.5%. The proportions between agricultural product prices and the prices of production resources acquired by agricultural producers will be less profitable for them after 2010 than they were in previous years.

Table 3. The value of production, the costs of indirect use and gross value added for Polish agriculture in 2008 - 2010 and projection for 2013

Specification	Numbers in PLN million		Average for 2008 - 2010 =100
	average for 2008 - 2010	according to projection for 2013	
Calculation in current prices:			
- production value	72964	84515	115.8
- indirect use	48936	56301	115.0
- added value	24028	28214	117.4
Calculation in fixed prices (from 2009):			
- production value	72964	78664	107.8
- indirect use	48936	50180	102.5
- added value	24028	28484	118.5

Source: own calculations based on K.Jabłoński's calculations.

It is worth mentioning yet another aspect of problem under discussion. In 2013 the value of agricultural production calculated in fixed prices, recalculated per unit of indirect use costs, will be 5.1% greater than the average in 2008--2010. This means an increase in the productivity of indirect use at an annual average rate of 1.7%, which means that the rate may be even bigger (by 0.4 percentage point) than in 1998-2010.

Moreover, it is known that the level of payments as expressed in the Polish currency will not change much in 2010-2013.

1.4. Income in agriculture and the situation of farms in 2014-2020

Similarly to 2004-2010, the situation of Polish agriculture in 2014 and the next six years will certainly be influenced by the economic situation, shaped by the situation outside the country and by institutional factors, both external (mainly the level of payments within the framework of common agricultural policy, and the liquidation of milk quotas) and domestic ones (liquidation of the moratorium on the import of some fodder components, reform of social insurance and taxation of farms). All of these factors are relevant for the growth of income of farms.

A brief description of the enumerated factors and the estimations of their economic results are presented below.

Two issues should be taken into account when considering the economic situation in relation to agricultural and food products. The first and pessimistic one follows from the continuing worldwide crisis on a global scale, with stagnant prices; the second one, on the other hand, is optimistic and is the result of a more favourable course of events.

The number of people in economically developed countries has ceased to grow and there is the possibility to limit food consumption per capita as a result of the increased popularity of staying slim, and more importantly due to health reasons. In developing countries, there are more people than in developed countries, and the number of people living there is still growing. The income of people due to economy globalisation is also growing. The demand for food will increase and it is estimated that this phenomenon will last at least until the middle of the current century. The growth of demand for raw materials of agricultural origin for biofuel and other food goods production cannot be excluded.

However, the possibilities for growth in the supply of products of agricultural origin are limited on a global scale. The extension of the areas for agricultural production cannot be foreseen since it would lead to limiting the area of tropical forests and thus to the exacerbation of the global greenhouse effect. The resources of water for irrigation are also limited (now about 70% of water used by the population is used for irrigating crops), and - according to specialists - easily accessible resources of freshwater are decreasing. Moreover, the intensive irrigation of crops in subtropical and tropical zones leads to the increasing salinity of soil and as an effect to the abandonment of agricultural production, and to

the erosion of soil caused by inappropriate techniques of cultivating farms covers about 30% of agricultural land. It should be borne in mind, moreover, that economic growth and the escalating phenomenon of urbanization additionally contribute to limiting that area, where the quality of land is often good.

Polish agriculture started to participate in the global division of labour in the production of goods of agricultural origin since 2003, which can be proved by the positive balance of foreign trade in agricultural and food products. Favourable agricultural product prices on global markets are also reflected in the national market. An optimistic assumption is that in 2014-2020 prices will change as favourably as in 2002-2010, and in fact as in 2002-2013, since the projection for 2013 was drawn up on the basis of historical data. It is assumed thus that the prices of agricultural goods will increase annually by 4.8%[2], while the prices of goods and services bought by agricultural producers for the aims of current agricultural production will grow slightly faster - by 5.1%.

The results of changes in the common agricultural policy can be estimated initially for 2014-2020 with relation to the situation from the period covering 2007-2013, since the negotiations within that area have not finished yet. Referring to the proposal of the European Commission concerning that issue of 12 October 2011 it can only be assumed that the amounts of direct payments will be nominally lower by 7% than in 2013.

This year, the moratorium for the import of soy pellets from the seeds of soy modified with the use of genetic engineering methods (the so-called GMO soy pellets) has been extended, and if it is not extended for the next period, then the income of agricultural farms will fall. Soy pellets are an excellent component of concentrates, which are used mainly in the breeding of poultry, piglets and wild young boars, and its substitution is expensive. It is estimated that depending on the kind of used substitutes, the income of agriculture would be lower by 0.8-4.5% [Józwiak 2012] for this reason only. In farms specialised in the breeding of poultry and pigs, on the other hand, the average drop of income would be 20 and 8% respectively.

The intervention policy in the cow milk market started in the European Union (then still the EEC) in the 1960s and was continued in the next years. The last reform of that policy was prepared in 2008 with the aim to lift in 2015 the milk production quotas currently in force in order to introduce market regulation of milk supply. It is assumed that the liquidation of milk quotas will contribute to slow down the decrease in the production of that product in the country, but due to the drop of price levels, the income of cow milk producers will decrease by

[2] Similar opinion about future changes of agricultural product prices were expressed by INRA officials in France in 2007, see [Józwiak 2008].

5.1%, and with reference to the whole agriculture, the drop will amount to 0.8% [Hamulczuk and Stańko 2009].

Social insurance contributions of individual farmers and members of their families working in the owned farms cover pension and health insurance. The following funds operate to that effect: pension and health funds created from the contributions of farmers and mostly from state budget subsidies. Moreover, farmers provide funds for contribution fund which covers accident, sickness and maternal and birth insurance.

The administration of current health pension insurance is a big burden on the state budget and is not compliant with the sense of social justice, since it is used by persons who are not farmers. The assumptions of the reform of the characterised kind of insurance described below are going to prevent that [Neneman et al. 2012]. It assumes a different treatment of farmers depending on their income[3] from the owned farm. Farmers who achieve a small income would still have insurance then on the current – preferential - basis. Persons achieving over 50% of income not from the owned farm and those whose income would justify covering them by the general insurance would fall beyond this group. Farmers with medium and big income would thus pay higher insurance contributions than those insured on the preferential basis but they would receive bigger benefits in the future.

Such a reform of pension insurance would have several advantages: it would exclude the insurance of persons who do not work on owned farms, it would not create barriers for achieving income outside the owned farm and would enable smooth movement along with the increase of income from preferential insurance to general insurance. It is estimated that in case this proposal is implemented, the total annual amount of pension insurance contribution would increase by PLN 2-3 billion, calculating in prices from 2011. This amount would limit personal income of individual farmers and their families.

It is surprising that the attention of politics and public opinion is directed at the issues of social insurance while the contribution to this insurance is paid in the Farmers' Social Security Fund (FSSF) by only about 54% of farmers who own farms of the area of 1 and more ha, and the persons from the remaining farms are insured in other insurance systems since a farm is not their main source of income. Thus in FSSF are insured persons from farms which are the only or main source of income for their owners. The adjustment of the pension contribution would only relate to half of the farmers and those who make their

[3] The quoted authors do not write about the income but about revenue from the farm, as a solution which is simpler to implement, but it does not change the issue of the matter, since the calculation the contribution will in fact relate to the income calculated as a part of revenue amount.

living mainly or only from the farm. It is thus justified to direct the reform of taxing farms with the income tax together with accounting for the pension and health insurance payment. The characteristic features of this reform [Józwiak and Jagła 2010] can be put as follows:

- The owners of farms would pay income tax in accordance with the rules set out in the Act of 26 July 1991 on personal income tax, as well as later regulations which concern this group of taxpayers,
- persons insured in the FSSF would pay contributions for pension and health insurance in accordance with regulations generally in force in our country and would include these contributions in the tax statement,
- the tax would cover income from agricultural production carried out (excluding direct subsidies) and others, as well as from work beyond the owned farm,
- farms would still pay farm tax on the basis of rules currently in force, which would take the form of a property tax (ad valorem property tax) and would increase the costs of running the farm.

The account drawn up on the basis of these assumptions enable one to state that the income of about 1973 thousand of farms, i.e. up to 2 ESU (about 87% of the total amount of farms in the country in 2010) would not change but their owners would not be able to pay the pension and health insurance contribution and would only be insured if they work beyond the owned farm on the basis of work contracts. The income of bigger farms would decrease by 25.4-51.1%, and the biggest drop would occur in smaller farms. It is estimated that the expenditure of persons running farms would be higher by PLN 9.6 billion, and the inflows to the national budget would increase by PLN 9.8 billion, calculating them only in prices from 2009. The summary of economic effects of considered institutional changes and new institutions is presented in Table 4.

The findings presented above show that Polish agriculture will enter in 2014 in new planning and accounting period in the European Union in a condition showing fast development, which is seen mainly due to the fact that the group of developing farms is growing and becoming stronger, and which have also competitive ability. There are also issues which show that this favourable situation can become slower from 2014 onwards.

Table 4. Changes of gross value added, gross income of farms and personal income of farm families connected with agricultural production caused by the changed and new institutions in 2008 – 2020 in PLN million (current prices)

Specification	Average annual income from 2008-2010	Projection for 2013	Vision for 2020, version:	
			pessimistic	optimistic
Value of production in basic prices	72964	84515	84515	113419
indirect use	48936	56301	56301	75950
Gross value added	**24028**	**28214**	**28214**	**37469**
taxes	1344	1645	1645	2208
Foreign production factors payments	5617	5200	4470	4470
Changed or new institutions - subsidies not connected with type of production - GMO moratorium expiry - liquidation of milk quotas	10651	12182	 11329[a] -1456 -267	 11329[a] -337 -337
Gross income of farms	**27718**	**33551**	**31905**	**41446**
other changed or new institutions: - reform of pension insurance[b] - introduction of income tax together with social insurance settlement			 -11808	 -2437
Personal income connected with the farm	**27718**	**33551**	**20097**	**39009**

a. Fixed relation of national currency to EUR was assumed in 2013 – 2020.
b. The system which currently is in force regarding natural persons is assumed.
Source: own calculations based on data provided above and the literature on the subject.

The estimations prepared on the basis of the pessimistic assumptions (stagnation in price relations concerning agricultural and food products as well as production resources due to the crisis, limited subsidies for farms, ban on the import of certain production resources important for agricultural production, the introduction of the income tax which would be calculated as for natural persons, which means taking into account the pension and health insurance contributions) show that in 2020 the number of developing farms would be reduced from about 290 to 74 thousand, and thus the limitation of the national production value of the share of products produced by them from 64% to 24%. This would forecast a further growth in the import of agricultural goods. Farms that specialise

in breeding poultry, pigs and milk cows, as well as in the cultivation of crops would be in a more difficult situation compared to other farms.

Yet the optimistic version is still possible. defeat of The economic crisis overcome faster than expected (as shown by the latest results for the economies of the United States and China) can start a global boom for agricultural products and despite the limited level of subsidies for farms and institutional changes (along with limiting the results of those whose aim would be to decrease the burden on the national budget) can create circumstances which would facilitate the development of Polish agriculture, like in 2004-2010, and probably also in 2011 - 2013. This situation would be better for farms which specialise in breeding poultry, pigs and milk cows, as well as in cultivating crops.

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2. The Russian agricultural sector and WTO: advantages and disadvantages

Nowadays Russian agroindustrial sector is at a new stage of development, the dynamics of which will be defined by three main factors: Russia's accession to the WTO, formation of Common Economic Area with Customs Union and solutions to the problems of Food Supply Security. Therefore in the context of WTO accession the development of tendencies, forms and mechanisms of interactions between banking and agroindustrial sectors in Russia are very acute.

Agricultural sector is the most important part of the material production of any state. Agricultural production is understood as a complex of different types of economic activities such as growing, production, processing of agricultural products, raw materials and supplies, including rendering of appropriate services. Along with the strategic relevance of these products inside the country there is a possibility for export that contributes to diversification of the external trade. This question turns out to be on the front burner in the times of Russia's WTO accession.

Table 1. Quota of state support during Russia's WTO accession

Period	Quota of state support
2012-2013	$9 bln
2014	$8,1 bln
2015	$7,2 bln
2016	$6,3 bln
2017	$5,4 bln
2018	$4,4 bln

As a result of negotiations, held for 17 years, Russia and WTO managed to achieve an optimal balance between the defense of national agricultural interests and access of foreign companies to Russian market. And also the volume of the state support was agreed. Thus, Russia undertook obligations to reduce measures of State support down to 9 billions of dollars for the period until 2013 (it is 1,5 times more than was planned for the period of 2012 – 5,6 billions

of dollars or 170 billions of rubles) and gradually minimize this amount to 4,4 billions of dollars (Table 1).

The agreement by WTO on the agricultural question presupposes the division of all actions into several the so called "boxes". According to this division based upon the degree of distorting influence on commerce the following types of "boxes" are distinguished: "the green box", "the blue box", "the yellow box" (Table 2).

Table 2. Measures, taken towards agricultural sector according to the WTO agreement

"Green box"	"Yellow box"	"Blue box"
- formation and maintenance of infrastructure; - loss compensations in case of natural disasters; - agricultural revenue insurance; - scientific research ; - staff training and etc.	- price supports of intervention purchase of goods; - subsidies for certain types of products; - compensation of some expenses on mixed feed, mineral fertilizers and etc.; - benefits for petroleum; - electric power consumptions at reduced rates; - loans on favourable terms.	- pay-outs connected with the fixed crops; - pay-outs are made if 85% or less than 85% of output level is achieved; - when pay-outs are made to livestock farmers, the farm stock is taken into account.

The "Green box" includes the measures that do not influence directly on production increase or limitations on trade. The common criteria of this "box" are subsidies from budget funds, not consumers' funds. The support measures are to be released from the reduction commitments if the criteria are met. Such actions are aimed at shaping the infrastructure, staff training, loss compensations in case of natural disasters.

Measures of the "blue box" include programs, aimed at producing self-restriction. While the payments from the state budget should be connected with fix livestock number or fix farm areas and crops, or the payments are made at the rate of 85 % or less of base production level.

The "Yellow box" includes measures that influence those spheres of trade that are not covered by the "green box" or "blue box": price support, interest rate subsidies, compensation of petroleum expenses, electricity and etc. Such actions are limited in volumes and must be cut.

Thus, 9 billions of dollars is the possible support volume within the bounds of the "yellow box". As for the "green box", these measures are not limited. Designed events within the State project "The development of agriculture and market regulations of agricultural products, raw materials and supplies for

2013-2020" will be fulfilled with the complete use of the "green box" instruments, so that there is no distorting influence on world commerce according to the WTO principles. And the key events of the State program will be preserved, including events on infrastructure development, social development of the rural areas, amelioration.

In the sphere of customs tariff regulations the reduction of average weighted rate, from the present state till the final level, will reach 2,4% points (from 13,2 % till 10,8) Nowadays the work is being carried out to tackle the questions, connected with the reduction of the customs tariff protection concerning meat (especially pork), sugar, milk and other dairy products and soothe the situation. And it is also suggested using mechanism of product support.

Obligations on reductions of customs duties:

- on live hogs – from 40% to 5%, on pork from 15% to 0%, under quota, from 75% to 65% over quota, on bypass from 25% to 15%, while either hog fat, or bypass do not fall within the allocations of quotas, despite the fact that their total annual import in Russia is about 500 000 tones;
- on fish products from 15% to 12,5-12% with 1-3 years, on fish raw materials – from 10 to 8-6%, in certain circumstances to 5-3%;
- on milk, cream powder or condensed milk, butter – from 25% to 20%, thus restoring the rates that were effective until January'1 2010, on whey powder – from 15 %, not less than 0,35 eur per 1 kilo, to 10-15%;
- on some feedstuff for domestic animals and pets (including soybeans, press cake, extraction cake), on vegetables, fruits and nuts (pistachio, peanuts, oranges, grapes, bananas and so on) not growing in Russia, especially vegetables and fruits in winter period;
- the constant scale for the import rate of raw-sugar is introduced on the level of $140 per ton, that reduces the tariff protection of the national manufacturers by 25% (earlier they were defended by a floating duty for importing raw-sugar, which went up or down depending on the world market price.)

Besides the WTO agreement forbids direct financing of the agriculture; that is why it is necessary to work out indirect support measures for agricultural manufacturers such as: development of rural area infrastructure, updating of equipment, loan interest subsidization, investments in agricultural educational institutions. In this respect the role of agricultural sector lending is getting more and more significant.

For a long time the system of commercial lending in Russia has been focusing on production with relatively high capital turnover, while agriculture is

basically unpromising object for investments due to low yields, not sufficient returns and illiquid assets. High interests and unprofitable terms of credit do not let agricultural manufacturers compete as an equal on credit market. However the agricultural sector in particular needs lending due to the seasonal nature of manufacturing; that breeds an unbalanced flow of financial resources.

Agriculture cannot develop productively without seasonal loans or crop loans for current capital purchase for future crops, for resource purchase for cattle brooding, which further goes on sale. The need of agricultural sector for long-term loans is also great, as they are important sources of basic funds increase and advances in their structure in times of progress in science and technology. So, the higher the level of development of agricultural production is, the more important the role of loans becomes. However nowadays, on the one hand, commercial banks are not interested and not ready to cooperate with borrowing agricultural businesses because of impending risk of a loan default, on the other hand – agricultural manufacturers are not willing to get loans due to their dearness and short terms.

Amid WTO accession the country works out and implements the economic measures on the development of agricultural crediting. The important role in this is given to the interest rate subsidy program, that helps the agricultural manufacturers and other representatives of this sector get loans in commercial banks and other consumers' cooperatives. The participants of such program received the access to bank resources not only for purposes of financing their current capitals, but they also managed to update and modernize their material and technical base on account of long-term loans.

However it doesn't mean that integral financial system of agricultural services is created in Russia. That is proved by the following facts:

- the major creditors are 5 big banks with the state participation (Rosselkhozbank, Sberbank of Russia, Vnesheconombank, Gazprombank, VTB). So, the volume of credit given to agricultural sector, for instance in Tatarstan Republic for 01.01.2012 , is 22 billions of dollars , ratio of this financing is 4,1% (on the whole, in Russia – 1,9%). Out of this amount, loans by Rosselkhozbank is 7,1 billions of dollars, or 32,4% of the total sum, by the branch of Sberbank of Russia – 4 billions of dollars.
- funding base of regional banks, which cooperate with agricultural manufacturers in regions, is developed not sufficiently. In Tatarstan in 2011 loacal banks were loaned 10,7 billions of dollars, that is half a billion less than it was loaned by regional branches of Sberbank and Rossekhozbank.

Major banks lending money to agricultural sector in Tatarstan region are Tatfondbank ($4,2 bln), AK Bars Bank ($2,8 bln), Akibank ($1,9 bln).

- the system of rural credit unions is not well developed.
- there are disadvantages in current system of interest rate subsidizing for agriculture.
- no conditions for effective functioning of warranty and pledge funds, which expands the possibilities for agricultural subsidizing.

As a result the following measures for the development of the agricultural financing program are proposed:

- to create and develop specialized agricultural institutions with the help of small and average manufacturers, as well as engaging the big ones.;
- to include all the commercial banks that loan and support the agricultural sector in the lending program on favourable terms;
- to develop the system of insurance against loan defaults, and long-term cooperation among agricultural manufacturers, commercial banks and insurance companies will be created;
- to create agricultural warranty agencies, so that a bank will accept a guarantee given by these agencies as a collateral for a loan;
- to introduce the pledge control as a part of which the estimating companies will be responsible for products' safety that were given to the bank by the pledger .

Thus the interaction between agricultural and bank sectors in the context of WTO accession must take into account interests and needs of both sectors for the successful development of national economy and world trade integration.

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3. Policy and economic rent as sources of agricultural producer's income

3.1. Introduction

We assume income to be a basis of the function of the agricultural producer's aim. Next, we show two fundamental sources of this income. The first one is efficiency of production. The second source is agricultural policy income effects. In the analysis, we leave out relations of prices received and paid as surface sources, using them as data on the basis of the *ceteris paribas* principle. We call economic rent the first source associated with efficiency. The second - related to the agricultural policy is policy rent[4]. We make this simplification, using the principle of reductionism to extract the essence of the issue raised in the paper.

Of course, the producer resorts to both of these sources of shaping and growth of income. What is more, in their rational behaviour, which is a somewhat classic premise in microeconomics, they resort to the source which is more favourable[5]. More favourable, or more useful, i.e. means that it produces greater effects in relation to the costs (efforts) associated with it.

The purpose of the paper is to show a certain range of substitution between these sources of revenue of the producer. We do not put forward a claim on substitution whereby increasing the scope of policy support leads to a reduction of efforts to improve efficiency or vice versa. We can then experience a synergy effect.

The purpose of the paper is only to show the problem of substitution between the effects of policy and economic rent and provide a certain illustration

[4] These concepts known in economics were introduced to agricultural economics by J. Wilkin [Wilkin 2005].

[5] We may refer this to the theory of rational expectations by Lucas and Sargent from the 1970s, who assumed that economic operators (producers and consumers) adapt flexibly, for their own economic benefit or maximization of their own aim function, to anticipated changes in regulations and economic policy.

in this regard without making any specific hypothesis. In our reasoning, we use certain mathematical representations for showing a model as the basis of reasoning about the issue of substitution that has been raised. This is in line with the micro-economic model of the producer's choice, but the approach is completely original.

3.2. Income as a function of the agricultural producer's aim

Let us assume that - having regard to the uncertainty associated with the environmental and climate aspects of the process of management in agriculture - we can express the function of the agricultural producer' aim as follows:

$$\max_{R} E\{D_t\} \tag{1}$$

We define the income of the agricultural producer[6]:

$$D_t = \{C_R \cdot R - N \cdot C_N(R)\} \tag{2}$$

where:

$R \cdot C_R$ - means the revenue (production value) of the agricultural producer (agriculture sector) as the product of the volume of production (supply) and the prices of products,

$N \cdot C_N(R) \Rightarrow C_K \cdot K + C_L \cdot L$ - means the cost of using manufacturing factors i.e. the factor of capital and the labour factor for a given level of agricultural production (on a producer or sector scale),

C_K, K - means remuneration (price) of the capital factor and the involvement of capital factor,

C_L, L - remuneration (price) of labour factor and employment of the labour factor,

E - expected value.

Next we can assume, in a simplistic manner, for simplification in order to extract the essence of the issue raised, that the income of agricultural producers is only a product of the remuneration of the labour factor and its employment. So we have a simple relation:

$$C_R \cdot R - K \cdot C_K \approx L \cdot C_L \tag{3}$$

As we know, the income of agricultural producers (income in agriculture) is currently being increased as a result of the effects of existing agricultural poli-

[6] In the same way we define the function of producer in mathematical economics.

cy solutions (CAP). We will denote this with the symbol: T_B.; It is, i.e., revenue, also being reduced, although to a small extent by imposing tax and other burdens, which is denoted as: P_T. Therefore we can express the income of agricultural producers as:

$$L \cdot C_L + (T_B - P_T) = D_R \tag{4}$$

where:

T_B - value of different forms of transfers, subsidies and support for agriculture producing the income effect (direct payments, maintaining prices, quotas on prices, quotas on import and other regulations, production and intervention activities),

P_T - value of different tax burdens and other payments imposed on the agricultural holding,

D_R - income of agricultural producers (agriculture).

We further assume that income, such defined, is a maximized function of the agricultural producer's aim. This is a certain simplification, because of the multi-criterion function of the producer's aim[7], however, it is needed for extracting the essence of the discussed problem of substitution of the agricultural producer's two income sources.

3.3. Economic and policy rent in realising the function of the agricultural producer's aim

To capture the impact of agricultural policy on the agricultural producer's aim function expressed in such a way, and, to be more precise, on the paths of its maximization, let us identify, in the context of this formula, two main sources of income growth. First, this source is improved efficiency of production (with a given relation of prices obtained for products to prices paid for inputs). Second, this source is also funds obtained from solutions under the CAP agricultural policy. We can also write it as follows:

$$D_t = \max_R f\{(EP) + g(B)\} \tag{5}$$

where:

EP - production efficiency in its technical basis is: $\frac{y}{K+L}$,

$g(B)$ - income effect of support for agricultural producer related with

[7] Cf. A. Sielska [Sielska 2012: 28] and next, where the decision problem of the agricultural producer is shown, using the multicriterion approach, as a space of assessing decision options.

implementation of the various programmes and mechanisms of the CAP with an assumption facilitating further reasoning that: $P_T \approx const \approx \Delta P_T \approx 0$.
Using: $\{(EP) + g(B)\}$ as a component of this aim function, we can place the following dilemma facing a reasonably acting and progressive agricultural producer.[8] Will they be more focussed on income advantages of the CAP agricultural policy or on the advantages of improving the efficiency of production?

These former advantages related with agricultural policy are referred to as policy rent. The latter, related to the improvement of efficiency are called economic rent. Admittedly, the former seem easier to obtain than the latter. Whether this view is true or not, there is a different mechanism of achieving both types of income advantages. This is an interesting question in itself, which we leave for another occasion. At this point, we are interested in the question of the possible substitutability between these choices made by the producer (in the agricultural sector as a set of agricultural producers).

Let us note that production efficiency[9], as a source of income growth, depends on the producer, is an endogenous determinant. However, the benefits of agricultural policy, as well as changes in the relations of prices obtained to those paid, which is here assumed on the basis of the principle *ceteris paribus* in a short run[10], is a condition independent from the producer, an exogenous factor.

3.4. Economic rent

The first element of the equation (5) – economic rent – is production efficiency determined - for the convenience of this reasoning – in value terms rather than technically, as follows[11]:

$$EP = (C_R \cdot R - N \cdot C_N)_R \tag{6}$$

Of course, prices are fixed here. In the *TFP* approach (*Total Factor Productivity*), this efficiency can also be expressed as:

$$EP = \frac{R \cdot C_R}{N \cdot C_N} = \frac{R \cdot C_R}{K \cdot C_K + L \cdot C_L} \tag{7}$$

[8] Also in line with the aforementioned assumptions of the theory of rational expectations.
[9] Production efficiency is determined by a given production function for the agricultural producer (production technique): $R_t = f(K_t, L_t)$.
[10] However, price relations are a surface source rather than a fundamental source of change in profitability – with given efficiency - and thus revenue.
[11] When we assume price volatility $c = C_R / C_N$ (price scissors), this representation is expressed by the profitability index: $OP = (C_R^t \cdot R_t - N_t \cdot C_N^t)_R$.

And assuming unchanging price relations, i.e. prices obtained to those paid (price scissors), in dynamic terms appropriate for *TFP*, we can express this as:

$$\frac{\Delta EP}{EP} = \frac{\Delta R}{R} - \frac{\Delta N}{N} \approx \frac{\Delta R}{R} - (\frac{\Delta K}{K} + \frac{\Delta L}{L}) \tag{8}$$

and:

$$\frac{\Delta EP}{EP} > 0 \Rightarrow TFP \uparrow \quad \text{when:} \qquad \frac{\Delta R}{R} > (\frac{\Delta K}{K} + \frac{\Delta L}{L}) \tag{9}$$

The rate of growth of agricultural production in selected countries of the European Union is shown in Table 1.

Table 1. The rate of growth of agricultural production ( ) in selected countries of the European Union in years 2000 - 2009

Countries	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Belgium	6.0	-0.5	4.2	2.6	5.1	0.5	-0.5	2.0	-3.0	1.0
France	-0.8	-3.6	3.3	-9.9	10.7	-3.2	-2.4	1.0	2.3	0.1
Germany	-1.0	1.4	-3.9	0.1	10.8	-3.4	-0.2	-0.2	3.3	-2.2
the Netherlands	0.6	-4.8	-0.7	0.4	4.3	-0.4	-0.6	1.9	1.9	2.1
Poland	-3.8	5.2	0.2	-1.4	12.9	-0.3	-1.3	5.3	1.3	4.8
Spain	7.6	1.4	5.2	2.3	0.9	-13.1	2.5	10.0	-2.5	-0.1
Sweden	1.9	0.3	-1.8	-1.3	2.8	-0.2	-1.7	1.2	-1.5	1.0

Source: own calculations based on the FAO and EUROSTAT data.

The rate of growth of remuneration of labour factor in selected countries of the European Union is shown in Table 2.

Table 2. The rate of growth of remuneration of labour factor ( ) in selected countries of the European Union in years 2000 – 2010

Countries	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Belgium	-0.01	0.00	0.00	-0.03	-0.01	-0.03	-0.03	-0.03	-0.02	-0.03	-0.02
France	-0.01	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Germany	-0.04	-0.04	-0.04	-0.04	-0.03	-0.02	-0.03	-0.02	-0.02	-0.02	0.00
the Netherlands	-0.01	-0.04	-0.02	-0.02	-0.05	0.00	-0.02	-0.02	-0.02	-0.01	-0.01
Poland	0.00	0.01	-0.11	0.01	0.00	0.00	0.00	0.00	0.00	-0.04	-0.05
Spain	-0.01	0.00	-0.03	-0.05	0.01	-0.01	0.00	-0.02	0.01	-0.10	0.00
Sweden	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.01	-0.09	-0.04	-0.04	-0.06

Source: own calculations based on the FAO and EUROSTAT data.

We will not develop the issue of sources and measurement of production efficiency improvement[12], and we will limit ourselves to the above characteristics of the process of improving efficiency in the sense of changes in *TFP*, which at the same time includes many of the production factors.[13]

[12] This area is the topic of the work by A. Bezat, W. Rembisz [Bezat and Rembisz 2011].
[13] Measuring *TFP* based on grain industry in A. Bezat [Bezat 2008].

Let us just note that efficiency improvement is a source of income growth, whose triggering concerns a longer period when technical changes are possible (manufacturing techniques in the above formula for changes in relation: $\frac{\Delta K}{K} / \frac{\Delta L}{L}$), as a result of the investment. This is a source which is invisible on the surface of phenomena, in contrast to changes in relations of product prices and manufacturing factors. It should be noted that change in efficiency relations based on including new technical solutions in the production process involves investment.

3.5. Policy rent

Equally important is the question of the income effects of agricultural policy. The function of these effects: $g(B)$ expressed in the formula (5) can be written as follows:

$$g(B) = \bar{T_R} + T_B \cdot Z_t \tag{10}$$

where:

$\bar{T_R}$ - means the income effects related to market intervention in the organization of common markets (CMO) expressed as the average level of income support per agricultural holding;

$T_B \cdot Z_t$ - express direct area payments per hectare of arable land and the area of this arable land in the agricultural holding at a given time, having a direct impact on the income of agricultural producers.

We can use income effects (payments) expectation of agricultural policy according to the following function:

$$E[g(B)] = p(t) \cdot (T_B \cdot Z_t) \tag{11}$$

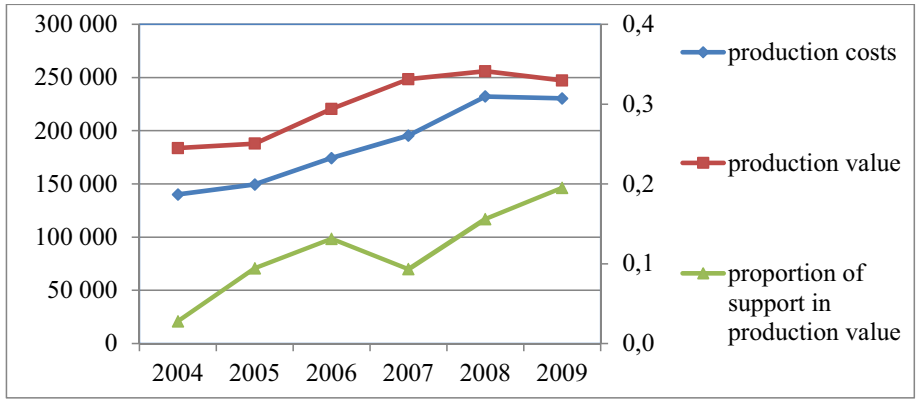
where[14]:

$p(t) = p(f(R_{t-1}) = p(f(K_{t-1}, L_{t-1})$ - are payments linked to production achieved from the previous base period.

Figure 1 shows the costs and value of production and the proportion of support in the framework of the agricultural policy in production value. As we can see the proportion of support in production value has increased in the period 2004-2009. The growth rate of support value was presented in Figure 2.

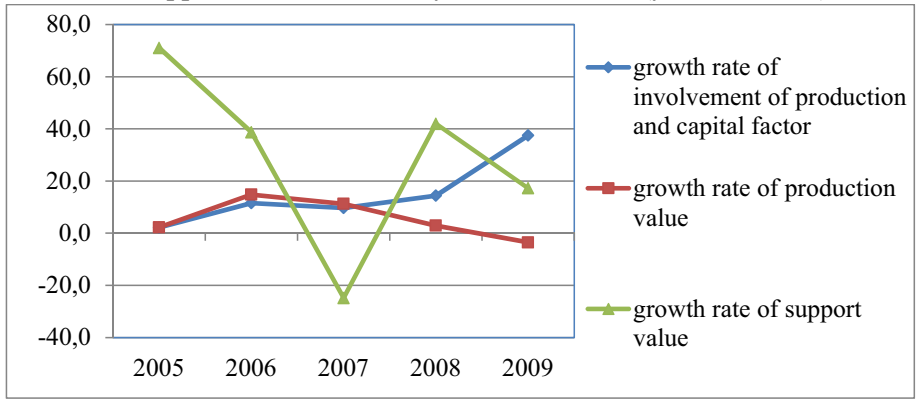
[14] Cf. the concept of D.A. Hennessy and A. Ghobin, C. Guyomard [Hannessy 1998; Ghobin and Guyomard 1999].

Figure 1. The costs and value of production and the proportion of support in the framework of the agricultural policy in production value in years 2004-2009



Source: own calculations based on FADN data.

Figure 2. The growth rate of labour and capital factor, the value of production and support in Poland in the years 2005-2009 (year t-1 = 100)



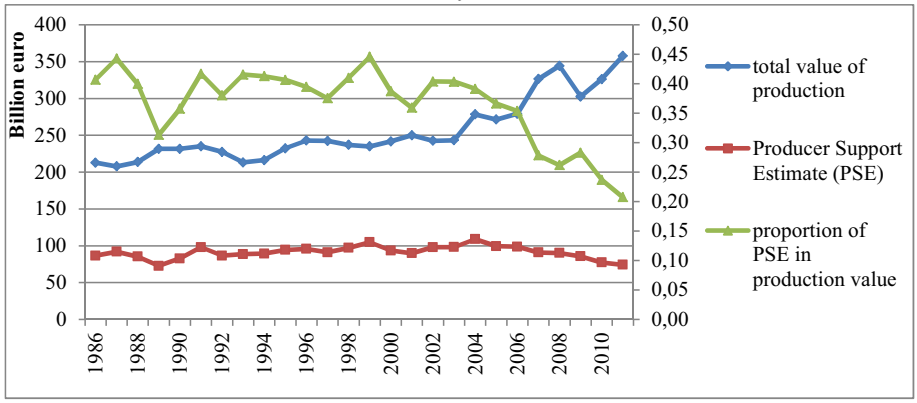
Source: own calculations based on FADN data.

In the considerations as part of the analysis PSE (*Producer Support Estimate*)[15] was provided, which presents how income counted in producer prices (I_s) are higher as a result of the obtained support in comparison to results without the support system (I_o). This indicator covers: price support, payments for

[15] Other indicators are: MPS (*Market Price Support*, which specifies the impact of price adjustment on the amount of retransfers to agricultural holding, CSE (*Consumer Support Estimate*), which characterizes the costs incurred by consumers as a result of the support system used and consumer NPC presenting the relation between domestic price and international price, without the support system, paid by the consumer. The total size of the transfers is represented by TSE (*Total Subside Estimate*) - describing retransfers from consumers and producers adjusted by transfers of producers to the budget (including from taxes paid) [Czyżewski and Kułyk 2009].

production, payments for acreage and livestock, payments for indirect consumption, payments limiting the involvement of current means of production, supporting income and other retransfers (Figure 3).

Figure 3. The value of agricultural production and support of producers (PSE) in the EU in the years 1986-2011



Source: own calculations based on OECD Stats.

The income effect of agricultural policy included in the formula (11), is the essence of policy rent. It is associated with expecting support which is receivable, almost per its definition. This expectation is important here. This is in a sense a reference to the theory of rational expectations and adaptive behaviour resulting from this. Could it not reflect on the ambition to maximize the aim function by improving efficiency of production? Let us examine this further.

3.6. Substitution between economic and policy rent

As demonstrated above, the producer maximizes his objective function - income based on two of its arguments: a) production efficiency and: b) support and transfers, as the effect of agricultural policy. Under the terms of rational choice (also rational expectations mentioned before), they seek balance by appropriately substituting the more expensive and demanding source with a relatively cheaper source, which does not require much effort. Improving economic efficiency (and profitability), in particular improving the use of efficiency of the factors of production at given price relation is always difficult. Using transfers is not costless, but it seems cheaper. Therefore we upheld the above argument that the producer behaving rationally will always be willing to adopt cheaper and more effective solutions. Intervention is probably such a solution, especially di-

rect transfers, because market intervention, especially targeted one, requires more effort.

To prove this observation, let us assume full and continuous substitution of these two factors (sources) of changes in the income of an agricultural producer, which we derived above. In addition, we assume that we consider this phenomenon for a given level of income. Increasing the use of a single source (factor), without changing the income must therefore be at the expense of another factor. As a result, the differential of income equation:

$$D = f(EP, B) \Rightarrow \max \tag{12}$$

is equal to zero, so we have:

$$dU_R = \Delta EP \frac{\partial U_R}{\partial EP} + \Delta B \frac{\partial U_R}{\partial B} = 0 \tag{13}$$

where:

$\Delta EP \frac{\partial U_R}{\partial EP}$ - means the income effect of improving the efficiency of production,

$\frac{\partial U_R}{\partial EP}$ - can be defined as marginal utility efficiency of an agricultural producer, that is, from the point of view of realization his aim function,

$\Delta B \frac{\partial U_R}{\partial B}$ - is the income effect of increasing the scope of support of the agricultural producer under the CAP,

$\frac{\partial U_R}{\partial B}$ - can be described as income marginal utility of support under the CAP for realization of the objective function of an agricultural producer.

Therefore, the agricultural producer optimizes his choices, i.e. reaches equilibrium when it comes to these two sources of income for the objective function (income maximizing), when we have:

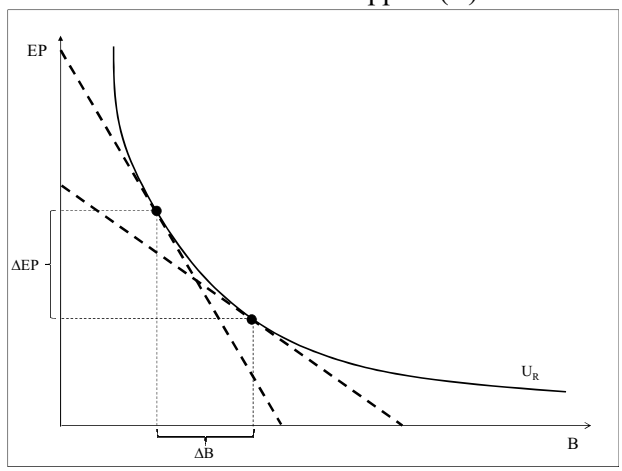
$$\pm \Delta EP \frac{\partial U_R}{\partial EP} = \mp \Delta B \frac{\partial U_R}{\partial B}, \tag{14}$$

that is, when equalizing the benefits of measures to improve production efficiency and measures to use the benefits of any intervention and support. In fact, by acting reasonably, they compensate for marginal utility of these two sources to improve their aim function. We omitted the minus sign here, so as not to suggest the direction of substitution between these two sources to improve income of an agricultural producer.

This condition means that the agricultural producer has reached a balance; i.e. they maximize their aim function – income, when the income effect of a policy equates the loss of income effect as a result of deterioration in the efficiency of production. This decrease in production efficiency stems from the fact that support resulted in a decreased pressure to improve efficiency that would exist

had it not been for the support[16]. But we need to remember that these are relative and unit values because they are referred to a given level of production (on a given isoquant), as shown in Figure 4.

Figure 4. The relationship between the level of efficiency (EP) and the level of support (B)



Source: own work.

Acting rationally, the agricultural producer will choose an easier solution, although they can be discouraged from this by ever increasing bureaucratic and cumbersome procedures (that generate ever increasing transaction costs associated with obtaining a transfer under agricultural policy instruments). In addition, on the basis of rational expectations, they can always provide for adaptation of the level of support to deteriorating economic climate in agriculture to lower profitability, etc. They have considerable political, reference material and scientific support.

Formally, the condition of substitution between these two sources of realization of the objective function can be written as follows:

$$s_{EP/B} = \frac{\Delta EP}{\Delta B} = -\frac{\frac{\partial U_R^{EP}}{\partial EP}}{\frac{\partial U_R^{B}}{\partial B}} \tag{15}$$

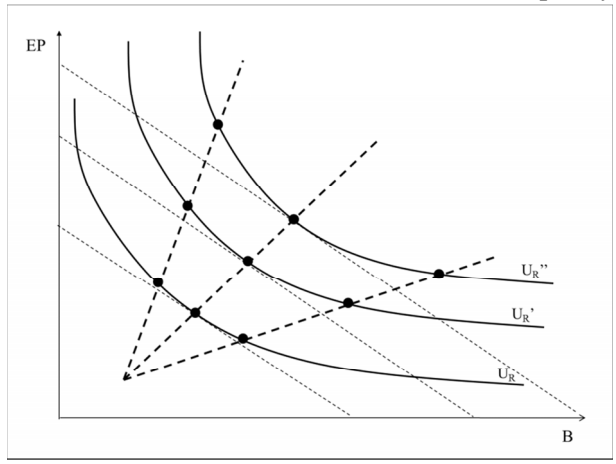
(Marginal) rate of substitution factor, which we defined as economic rent with a factor that we adopted as policy rent is determined by the relation of their impact on the (aim) utility function of the agricultural producer. This rate of substitution is determined by the relation of utility of these two sources of max-

[16] The direction of this substitution discussed on the basis of the above formula may go in the other way round, i.e. growing income effects of improved efficiency replace the need for support of the agricultural policy. It seems, however, less likely.

imizing income for an agricultural producer. This approach can be called an attempt to describe the mechanism of behaviour or choice of the agricultural producer. This mechanism is being referred at this point to a relation between economic and policy rent and generally and the condition of agricultural policy as an exogenous condition. Economic rent, i.e. is striving to improve efficiency, is an endogenous condition in this context.

Seeking to maximize utility, and thus the income existing in the aim function, the producer selects the more favourable combinations of available sources of their growth, i.e. a combination of economic and policy rent. The producer's behaviour refers here to consumer behaviour, maximising the utility of their basket of goods. The system of combination of economic and policy rent can be defined as a growth (expansion) path of income (Figure 5). The curve of the expansion of income is conditioned by substitution rate between the economic rent and policy rent.

Figure 5. Sample income expansion path depending on the selection of combination of economic and policy rent



Source: own work.

Thus, we can assume the condition described with the above formula (15) highlights substitutability between these two sources of improving income aim function of the agricultural producer. It shows the essence of the problem. There is some substitutability of support effects of agricultural policy in relation to the agricultural producer's efforts aimed at improving efficiency, as a primary source of income growth. This is a potential threat, because it may hinder those efforts which rely on structural change and processes of concentration. Of course, potentially this does not mean that it is a real threat. There may be a completely different synergy process, when the income effects of support under

the agricultural policy have an impact on investment and the associated modernization of manufacturing techniques and technology and, as a result, on improved efficiency of production. This requires separate empirical research and an additional analytical framework. The one in this analysis refers to static rather than dynamic conditions without taking account of investments.

This rate of substitution, as shown above with the relation of marginal utility of improved production efficiency (economic rent) and agricultural policy (policy rent) for income should be weighed against the costs to obtain these utilities. This is not, however, easy because it would be difficult to assume any limit on these costs as a condition for the function of the producer's aim due to the two factors discussed. It would be easier to determine the costs of achieving marginal utility from improved efficiency than the costs of achieving this thanks to a policy (participation in specific programmes or mechanisms). This requires additional analysis and research. For a mere sketch of the direction of reasoning, we can assume the following. The total "costs" associated with releasing these sources of income can be defined as:

$$kd = EP \cdot kd_{EP} + B \cdot kd_{B} \tag{16}$$

where:

kd_{EP} - is the cost of achieving income effects owing to economic rent,

kd_{B} - is the cost of achieving income effects owing to policy rent,

Assuming that the costs, such defined, of using both types of rent are a value given in advance (a restriction in a given time *t*), their differential will be zero, that is:

$$d(kd) = \Delta EP \cdot kd_{EP} + \Delta B \cdot kd_{B} = 0 \tag{17}$$

Therefore the marginal rate of income effect substitution for economic and policy rent will be as follows:

$$s_{EP/B} = \frac{\Delta EP}{\Delta B} = -\frac{kd_{EP}}{kd_{B}} \tag{18}$$

The changes in economic and policy rent have been shown in Table 5. The rate of substitution is negative in most of analysed years that confirms analytical relationships shown in equation (18).

It is easy to assemble these marginal substitution rates to get a view as to the choice mechanism of the producer in respect of the types of rent discussed here, as sources of income and its maximization. We can probably assume that:

$$kd_{EP} > kd_{B} \tag{19}$$

This, as we can assume, determines the direction of substitution in the scope of both types of rent analysed here. Policy rent somewhat supersedes economic rent, as it were. A wider analysis will be done on a separate occasion.

Table 5. Changes in economic and policy rent and the rate of substitution between these types of rent among agricultural holdings in Poland in years 2005-2009 (year t-1 = 100, delta EP and delta B in PLN)

description	2005	2006	2007	2008	2009
delta EP	-4615.02	9143.28	4480.47	-27311.82	-3394.83
delta B	11703.90	9242.16	-3094.74	14463.53	6148.93
rate of substitution	-0.39	0.99	-1.45	-1.89	-0.55

Source: own calculations based on FADN data.

3.7. Summary

The paper discusses the topic of the sources of income shaping and its growth, as a basis of the aim function of the agricultural producer. By maximizing this function and striving to increase the level of utility, the producer chooses between two major sources of this growth, namely production efficiency and transfers in the framework of agricultural policy. Those two elements – referred to in the paper in the same way as by other researchers and for simplification purposes, as economic and policy rent – they determine the producer's income effects.

However, the rate of substitution of these two sources of income growth is not equal to one, which means that replacing one with the other is not without any effect on the level of income. This is due to the fact that, first, transaction costs of achieving each type of rent, and second, changing in efficiency terms, are related to investment which do not otherwise exist in the case of transfers from agricultural policy.

Reaching to rationality in the producer's behaviourism, it is clear that the dominant source of shaping income and its growth will be the type of rent which is more useful – it generates a given income level at lower cost.

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4. An analysis of current economic problems and development factors in agriculture facing Ukraine

4.1. Introduction

Ukraine's agricultural economy will only prosper under certain conditions: if it's villages themselves prosper and rural people are able to make a viable and interesting living. However, with the current position of the Ukrainian peasantary this is not being attained. The efficiency of agricultural production does not provide for even simple recreation.

In a typical Ukrainian village the main problems are as following: an absence of a highly motivated labour force, a high endemic unemployment rate, poverty of the rural population, labour migration towards the cities, a decline of the social infrastructure and growth in the number of deserted of villages. Given the current position the near-term task for Ukraine is to firmly take its place among the strong, economic developed countries of the world, pushing through with the economic, social, institutional transformations of society, which must touch all industries and spheres of the national economy.

Of great value to both the rural economy and economic prosperity as a whole has been the move towards a more modern agricultural system. This system provides a number of complex and interlocking economic and social functions. The great value is not only in the agricultural production that is derived, but also in the employment provided to the rural population as well as the contribution to Ukraine's GDP .

Agriculture not only exerts considerable influence in terms of economy and social relations, but also determines the level of food independence and economic security of country. Thus in many ways the attainment of achieving food independence has been seen in many countries as much as a political as economic a goal. Indeed, the security of having a secure and sustainable agricultural base to sustain a country's population provides greater value to the country than just the simple measure of agricultural output. The mininum safe standard is generally regarded as a country being at least 70% selfsufficent in food production. But for this purpose competitive as compared to an import it must be

not less than 80 - 85 % to the products, which is offered domestic commodity producers.

Consequently, the rural economy of Ukraine today is extraordinarily important is a decision of basic problems, which brake development of this branch, and also assistance influence of factors which accelerate process of disaffiliation from a difficult situation.

4.2. Ukrainian agrarian economy: current problems

Ukrainian geographic area is the second-largest of the European countries. It represents about 22% all territory that is suitable for agricultural in Europe.The general area of territory makes 603,7 thousands square km, and 71% of it is suitable for agricultural use.

The land area in Ukraine from which food can be produced (plough-land, gardens, hayfields, pastures etc) represent 9 % of the landed resources of the world. The size of fertile earths at Ukraine makes 40.8 million and approximately 33 million hectares are processed [Kulinyak 2012].

Table 1. Ukrainian agrarian production segment in a world agricultural production (from data of State Statistic Commettee of Ukraine)

Products	Year								
	2009			2010			2011		
	Whole world	Ukraine	Ukraine to the whole world, %	Whole world	Ukraine	Ukraine to the whole world, %	Whole world	Ukraine	Ukraine to the whole world, %
Produced, millions tons:									
Grain and leguminous crops	2557,7	46,0	1,8	2499,9	39,2	1,6	2315,9	56,7	2,4
Sugar beet	228,2	10,1	4,4	228,5	13,7	5,9	115,0	2,3	2,0
Sunflower seeds	32,4	6,3	19,4	32,4	6,7	20,7	37,3	8,6	23
Potatoes	329,6	19,7	6,0	324,2	18,7	5,7	328,4	24,2	7,4
Meet	283,9	1,9	0,7	292,8	2,1	0,7	973,4	2,1	0,2
Milk	702,1	11,6	1,7	720,9	11,2	1,5	366,6	11,0	3,0

Source: Agriculture of Ukrane, State Statistic Committee [19].

On the level of material well-being by agricultural lands (0.9 hectares per head of population), Ukraine among the European countries is surpassed only by

the Republic Byelorussia at 0.96 hectares per person, with the average in Europe standing at 0.7 hectares. Canada tops the world ranking with 1.43 hectares well above the average for all countries at 0.25 hectares and Asia where the figure is 0.15 hectares.

Agricultural production in Ukraine remains one of the leading constitutants of economic activity and repersents about 8.2 % of GDP [Kobzev 2011]. Produced in agriculture 1 grivna of products enables to get over 12 grivnas of products in other industries. The rural countryside and the inhabitants who reside and work within it therefore play a critical role in the economic development and wellbeing of the country as a whole.

Comparisons in agricultural production volumes in the world and in Ukraine are shown in table 1. From the data given in the table it is evident that Ukraine occupies considerable scale in the global production of sunflower, potato and sugar beet. However, the steady increase in agricultural production may be hampered by the followings problems:

1) A current level of the productivity in agriculture is far from what is potentially possible. Key factors to help achieve production closer to the potential in agricultural productivity are a greater abundance of modern tractor in combination with the required fertilizers. For the vast majority of agricultural establishments in Ukraine Agricultural enterprises in Ukraine the availability of both the tractors and fertilisers fall well short of what is required.

2) Over 80% of the losses from contamination are from the excess use of chemicals administered during the growing process. Above all it is the peasants who suffer most from this contamination, especially the children, with the rural death rate running at more than twice that experienced by the urban population.

3) Ukraine has 78% of its land under the plough. This is significantly above the level of other developed countries; in France 48 %, in Hungary 37%, in England 25%, in USA 20%. This greater usage of land leads over the medium term to an increrased degradation in the quality of the soil used in agricultural production.

A modern approach to the structure of land tenure is to a great extent determined by the volume of area given over to natural green crops. It has been internationally established that the best practice for well-balanced land management is to give over 30-50% of the land to hayfield, pastures and forest planting. The average for this is all EU is 39.3%, with France 36.6%, Germany 30.4% and the UK 63.1% while in in Ukraine the figure is only 19%. As a result of these tendencies in Ukraine only an about 5 million hectare is in relatively the natural state (bogs, lakes, rivers, mountains).

4) To increase agricultural competitiveness in Ukraine producers need an increase in labour productivity, improve the overall quality of the labour force through increased education and qualification and operating in a more uniformed and disciplined maner. Unemployment where it exists in the more rural locations tends to be endemic and structural in nature making it much harder to reduce. This is compounded by the fact that most of the young, educated and upwardly mobile graduates would never consider work in a rural setting.

Average monthly payment of labour in agriculture in 2011 year was 1801 grn., but also remained one of the lowest among all types of economic activity in a country. One of principal reasons for such a position is there exists relativly low prices for agricultural products compared to those being achieved for industrial products.

During 2011 debt payments from agriculture workers grew and by the start of January 2012 were 25.6 bln. grn., which represented 2.6% of the total debt of country [State Statistic Committee 2011].Consequently, for the vast majority of the population work in agriculture is viewed as a poor career choice. Workers engaged in employment through agricultural enterprises will lack money, have little access to professional qualifications and little prospect of promotion or moving to a better job.

The necessity to increase the professionally qualification levels of agrarian workers is go hand in hand with the introduction of new technique and progressive technologies for agricultural production. By learning the latest methods of production the farm workers are able to get basic qualifications as well as motivation and a sence of self worth. Perhaps more importantly they can see that there exists real prospects for the growth and development of both the business and themselves. This is particuarly important to attract and retain a younger generation of workers.

5) Agricultural enterprises in Ukraine that seek credit to operate their business achieve less favourable terms than their counterparts in other countries. In Ukraine a loan may be granted for the period of between 2 or 3 years before it is due to be paid back. This compares to between 20-30 years in other countries. In addition, the average interest rate charged in Ukraine is much higher than in other countries. These rates are: France 6.6 %, USA 4.6 %, China 5.3 %, while in Ukraine 18-20% [Pikus 2011]. The net effect of this is to put the repayments needed on the loan well beyond that which can be serviced from the income that can be generated. Credit volumes of agrarian sphere in Ukraine are shown in table 2.

The situation deteriorated during the recession of 2009 with the volumes of credits allocated to agriculture were reduced while at the same time interest rates in creased to 20-25%. These credits to a large extend remain inaccessible

to many due to poor credit and the inability to obtain any bank funding. At the same time foreign investors found that the combination of low over all profitability combined with a relatively high risk made any investment in the sector an unattractive proposition.

A reduction in the liquidity and free movement in assets within the agricultural sector heightened the need for an effective credit policy. It is felt by the domestic producers that an increase in the availability of and access to these credits has reduced the impact they have felt from the loss of potential loans through the banking system.

Table2. Volumes of crediting of Ukrainian agrarian sphere, bln. grn.

Index	Year		
	2009	2010	2011
Gross domestic product of Ukraine	913,3	1082,6	1316,6
Gross product of Urainian Agroindustrial Complex	197,9	194,9	233,7
All the volumes of allotted credit in the economy of country	703,5	501,0	802
Volumes of Agroindustrial Complex crediting	5,8	9,7	12,8
Lending ratio of Agroindustrial Complex, %	0,8	1,9	1,6

Source: Materials of the National bank of Ukraine [20].

During 2009-2010 the lending rate for agrarian enterprises remained within the limits of 16-36% [Cheremisina 2012]. In 2011 the volume of credits increased by 1.5 times for agrarian enterprises. With current interest rates in Ukraine today between about 18-22%.

Table 3. Efficiency of agricultural production in Ukraine (%)

Index	Year		
	2009	2010	2011
Products of agriculture	13,8	21,1	27,0
including plant-growers	16,9	26,7	32,3
including cattle-breeding	5,5	7,8	13,0

Source: Agriculture of Ukrane, State Statistic Committee [19].

6) To achieve the goal of increased agricultural production requires an efficient and organised system. In order to satisfy the everincreasing demands of consumers it is necessary to continually change and update technology that is being used. This will provide greater technical efficiency, productivity of the labour force and in time higher returns on the capital employed. It will however in the short term put more demands on the labour force both in terms of the

amount of work required as well as having to learn how to best adapt to new production techniques. Efficiency of agricultural production in Ukraine in 2009-2011 is shown in table 3.

There is a gradual increase in the profitability levels achieved by agrarian sector. Moreover, increased profitability will in turn bring increased inward investment creating a virtuous circle of increased profits, productivity and employment.

The current size andscale of many individual producers in the sector are well below what would be regarded an optimum size in terms of economic efficiency. Small scale producers are less able to adopt new p roduction techniques or try out new innovation. With many of these producers taking out a living at or even below the poverty line they are not in any position to change. While this change may increase future production it may require agreater immediate input of labour and capital or a short term reduction in output. Making this change however is simply not possible for most of these small scale producers.

The pattern of agricultural production by different categories of enterprisesis listed in table 4.

Table 4. The pattern of agricultural basic types production by the different categories of enterprises [%]

Production types	Year		
	2009	2010	2011
Agricultural enterprises			
Gross output	100	100	100
grain and grain leguminous crops	77,9	75,8	77,9
sugar beet	90,9	92,1	91,5
sunflower seeds	81,4	82,5	84,1
vegetables	13,4	11,9	15,7
meet	53,9	55,1	56,7
milk	19,3	19,7	20,3
shell eggs	58,2	60,1	62,8
Households			
Gross output	100	100	100
grain and grain leguminous crops	22,1	24,2	22,1
sugar beet	9,1	7,9	8,5
sunflower seeds	18,6	17,5	15,9
vegetables	86,6	88,1	84,3
meet	46,1	44,9	43,3
milk	80,7	80,3	79,7
shell eggs	41,8	39,9	37,2

Source: Agriculture of Ukrane, State Statistic Committee [19].

Nowadays in Ukraine the households and agrarian holdings function successfully enough. Herewith, after the line of poverty is 15,5% general amount of housholds, and in 25% - the combined charges do not exceed the level of living wage [Zastavnyuk 2011]. For today they can not be considered as one of optimum and perspective forms of menage, because they have a small sizes. Therefore, they are maladjusted to application of new progressive technologies and conducting of agricultural production on innovative basis.

Currently in Ukraine the number of small scale enterprises account for majority of the total number of enterprises. In 2011 about 88.7% were small scale, 10.7% medium size and 0.6% large scale producers (State Statistics Committee, 2011) The data in the table shows that products such as grain and leguminous crops, sugar beet and sunflower seeds were produced by agricultural enterprises. However, more than 80% of the total production of vegetables and milk was produced by individual households.

Despite assertions about the advantages of large scale enterprises it seems that small scale producers are still viable and able to compete in the production of certain products.

It can be seen that in 2011 there was an increase in gross crop production from both agricultural enterprises and households (Table 5).

Table 5. Indexes of agricultural production volume, % to the previous year

Index	Year		
	2009	2010	2011
Agricultural enterprises			
Gross output	94,9	97,7	128,7
Crop production	90,2	93,7	137,9
Animal products	111,3	109,1	106,0
Households			
Gross output	101,5	99,1	111,8
Crop production	102,4	98,5	121,7
Animal products	100,5	100,1	98,3

Source: Agriculture of Ukrane, State Statistic Committee [19].

It is recognised that legal organizational structure of land-tenure, in which a small-scale sector prevails, never will become a basis for structurally innovative re-erecting of domestic agrarian economy.

7) Over the years there has been a gradual and sustained shift away from house holds and small scale holdings producing agricultural products towards larger scale enterprises. Much of the larger scale enterprises rather than owning the land outright have built up there business through leasing the land. However,

to a large extent developments in the legal and control mechanisms have lagged behind the changes that have occurred in the market.

Table 6. The biggest Ukrainian large land-owners

№	Name of large land-owner	Size of latifudium, thousands of hectare	Owner of latifundium
1.	Partnership Association of limited liability «Ukrainian Agrarian Investments»	330	"Firstmed Management Limited" (Cyprus)
2.	Mariupol Metallurgic Integrated Plant named for Illich	225	Vladimir Boyko
3.	Nafkom-Agro	220	Olexandr Kravchuck
4.	Mironivski sereal products	180	MHP S.A. (Luxemburgh)
5.	Astarta Kyiv	166	Astarta Kiev NV (Netherlands)
6.	Dacor	163	Dakor Agro Holding (Ceprus)
7.	Agrarian Holding «Mriya»	158	Bank of New York (USA)
8.	Agroton	150	Yuriy Juravlev
9.	Privat Agrarian Holding	150	Igor Colomoyskiy
10.	Rise Agro	130	Vitaliy Cehmistrenko
11.	UkrRos	105	Sergiy Fedorenko
12.	Loture	101	Olexandr Milay
13.	Stiomi Holding	98	Mihaylo Stadnik (Ukraine, Israel)
14.	«Ukrzernoprom Agro»	96	"MCB Agricole Holding AG" (Austria)
15.	Syntal-D	94	Sintal Agriculture Public Ltd (Cyprus)
16.	Ukrprominvest	88	Petro Poroshenko
17.	Kernel Group	85	Namsen Ltd (Cyprus)
18.	Industrial Milk Company	85	Olexander Petrov
19.	Swarog West Group	75	Kostyantin Grigorishin (Russia)
20.	Nibulon	70	Olexiy Vadaturskiy
21.	Landcom Ukraine	70	Lendkom International PLC (Great Britain)
22.	Agroindustrial Firm «Shahtar»	62	Efim Zvyagilskiy
23.	Trigon Agri	49	Trigon Agri (Denmark)
24.	Inseco	38	Armex Trading (Great Britain)
25.	Agrarian Technology Company	32	Volodimir Shkolnick

Source: Mikhailov, 2010 [21].

Today in Ukraine there are about 60 large scale agrarian holdings with a total area under management of over 6 million hectares. These businesses employ a more capital intensive production methods as well as a structured man-

agement and reporting system than is found with smaller scale enterprises or individuals. Table 6 shows large land owners in Ukraine.

The larger scale operators in Ukraine today fall into two different groups: companies that have interests in several different countries as well as Ukraine and are listed on the international stock exchanges, wealthy individuals who having made money in industry and commerce have diversified into agriculture.
The increasing concentration of land resources in only a few different hands creates the prospect of a monopoly arising. This risk is particularly prevalent in the area of leased land. The ever increasing concentration of the ownership of these leases and scale of the operations being undertaken risk the market turning into a monopoly or oligopoly.

Such concentration of effective power in the marketplace has occurred at a time when the legislation covering agriculture has been geared up for scale enterprises or individuals - with the assumption in effect that there would be perfect competition. Consequently, an agrarian policy is needed to ensure that such large agricultural enterprises are not able to exert undue influence on the market and that competition and choice is maintained for the consumer.

Large scale operators in the market also have quite a different outlook. They are primarily responsible to there shareholders who are likely to live outside the agricultural areas they have under ownership. In the medium to long term the profits generated with be channelled to these individuals and companies outside the rural areas. This money will not then be available to develop and support the rural infrastructure.

8) The conditions faced by the rural population results in migration both to the cities and where possible to foreign countries. The migration of a skilled labour force from a village results in a deterioration in the pool of skilled labour available to the village. This can cause problems with the running of the local community as it tends to be the elderly and less skilled that are left in the village. As young people leave to seek out better opportunities elsewhere the number of children growing up in the village will decrease. Thus the next generation needed for the life blood of the village will not be there.
Similarly, the same shortfall of an accessible pool of skilled labour have a negative impact on the small local enterprises. They generally do not have the resources to recruit from outside the locality. Therefore, more than large scale enterprises they will rely on local labour and will suffer more than there large scale counterparts if there labour requirements can not be met locally.

9) An increase in the degradation of agricultural lands results in a decline in the productivity and volume of agricultural production. Today agricultural lands are in a critical condition with there quality slowly deteriorating.

10) At the present it is still unresolved the question of state support in the agrarian sector. The exact level and structure of this long term support has yet to be resolved. Over the years the amount of support offered by the state has varied. Moreover, with no clear guide or guarantee as to the nature or extent of any support in future has made any future planning much more difficult.

Agricultural development in Ukraine has also been held back by factors such as: poor rail and road infrastructure, an unstable political situation, uncertain economic outlook both inside and outside Ukraine, high depreciation rates of plant and equipment, unstable and generally rising fuel prices, low technology in some production giving rise to the production of too many commodity food stuffs as well as an increasing number of elderly population working in agriculture.

While the problems facing Ukraine are numerous they have not detracted from Ukraine standing in agricultural production. It is though necessary to develop a progressive and staged programme to move production methods forward.

4.3. Development factors in agriculture facing Ukraine

It is necessary to develop a policy that will ensure the future sustainability of the rural village. To achieve this the peasantry that live and work in the countryside must have a sustainable economic future.

To further progress agrarian economic development a structure both for the internal market and also to help drive increased export related activity. The factors require to achieve this are detailed below.

1) A much greater emphasis on food safety rather than just increasing production volumes. Increasingly at every stage in the supply chain right through to the final consumer there is a greater demand for information relating to the safety and integrity of the food that is being produced. Failure to implement adequate checks and a certification system of all foodstuffs will mean that any increased production will struggle to find a market.

2) Consumers are increasingly demanding organic production. Such organic production sells at a premium and hence has the ability to generate greater long term profits. To achieve this the quantity of land that is certified as organic needs to be increased.

3) Increased agricultural production must look beyond the borders of Ukraine for a market. Increasing time and resources need to be employed in the export market. This will show Ukraine production to the outside world. Moreover, the products need to be marketed as being a quality, healthy product rather than a commodity offering.

4) Increase the earning and economic output generated through agriculture. Ukraine has a great natural resource in agriculture and this can be used to generate valuable foreign exchange.

5) Improved productivity in agriculture will lead to higher wages and taxes. This tax revenue is particularly important at the local level. It can help sustain the local village as well as improve rural infrastructure.

Increased urbanization has placed a large strain on the worlds agricultural system. As more people have moved to the cities it has left an ever shrinking population in the countryside to produce an increasing quantity of food. It is estimated by the United Nations that the world population is increasing at about 3.5% per year while the increase in food production is running at only 1.5%. Such a situation is not new and was indeed first put forward by Thomas Malthus. It does however strengthen the case for increased agricultural investment in Ukraine. With the right marketing, quality, certification and safety standards in place there is all but a guaranteed demand in future for Ukrainian agricultural production.

Over the years Ukraine has lagged behind in the use of best practice techniques as well as the use of the latest agricultural machinery and equipment. The use of these was for many years largely confined to a few enterprising individuals and businesses. To increase production greater investment must be made both from the domestic and foreign markets. To attract this inward investment it is necessary to satisfy potential investors that the agricultural sector offers a favourable risk reward ratio.

The rewards for investors are through profits largely through export earnings as well as capital appreciation on their investment (over time land prices in Ukraine may more closer to the EU average giving a capital appreciation on any land holdings).

In many ways though any investment will be determined as much by the perceived risks that exist. Of greatest concern would be a stable political system as well as a solvent and stable financial sector. Investors will also seek assurances on the free movement of capital in and out of the country, favourable tax treatment both for individuals and their companies as well as assurances that they will not be tied up in regulation and red tape.

In addition to the investment of both capital and equipment we need to look at how best to increase the crop yields and return from a given area of land. To a large extend this is determined by better land management and techniques:

1) Provide incentives where needed for the land to remain idle. Overuse of the land will in time lead to a decrease in the yield from that land. Any individual or business though are likely to have a short term outlook and try and

maximise their returns for the following year. Achieving better long term management of the land may require tax incentives in order to encourage the land to be left to recover.

2) Ensure adequate crop rotation. Continuous production of the same crops will degrade the soil of the nutrients that it needs and lead to much poorer quality of crops being produced. Producers may well though focus on what they perceive to be the most valuable crop for the coming year rather than the long term health of the soil. It may be necessary for the producers to be guaranteed a minimum price in advance at which their crops will be purchased to ensure they grow a particular crop.

3) Phase out low yielding varieties of a crop. Producers may seek to grow the variety of a crop they are most accustomed to. This may not though be the variety that will offer the best yields.

4) Ensure that there are adequate resources available after planting a crop. It is one thing to plant a crop but unless it can be successful brought to market then it will not generate revenue. There needs to be adequate labour and equipment made available for what might be a very short time window to harvest the crop. Once harvested the crop will need proper handling and storage. Lastly, provisions must be put in place to ensure there is adequate transport infrastructure available both from the rural farm and at the port if the goods are travelling internationally.

China is today one of the largest investors in agriculture in Ukraine. The inward investment that was agreed in an agreement reached in Hong Kong represents around $6 billion dollars. This investment gives priority to certain areas including pesticide and fertiliser production, modernising of irrigation systems, using new and technology to help inprove crop yields and improving the productivity of cattle breeding and poultry farming.

Once the necessary investment in people and equipment has been made the agricultural production needs to be presented in the best possible light. It is necessary not just to produce a quality, safe and cost effective product but also to market this to potential buyers and consumers.

Companies in Ukraine are not market leaders in providing the end product bought by consumers on the international stage. Most companies with recognisable brands are either from Western Europe or America. Where possible these companies should be encouraged to form joint ventures with partners in Ukraine. The agricultural sector in Ukraine offers a quality reliable product. The international companies in contrast offer marketing expertise, brand loyalty programs and an access to the market which would at best be extremely difficult for businesses in Ukraine to achieve by themselves.

While joint ventures of this sort have their advantages from investment and increased exports there are also some potential pitfall that need to be avoided. Byfar the most relevant is that associated with transfer pricing. This is where the foreign multinational would place a very low value and hence price on the basic foodstuffs. In doing so they could produce an end product and apparently show zero or very little profits being made (profits to be shared with their Ukrainian partner or taxed by the government). Instead they would simply move their profits down the line to the distribution arm of their business. In doing so the profits from agricultural produce from Ukraine would end up abroad.

Of no less an importance for the rural economy than the encouragement of foreign partners to work with businesses in Ukraine is the development of a sustainable social policy. Such a policy is needed help weld the fabric of the rural community together as well as acting as a catalyst to help grow the economy. Examples of this social policy can be seen in both Germany and Japan.

The social policy could encompass a guarantee of employment and a minimum wage; support with the cost of housing either through low interest rates a rent subsidy or the building of low cost housing; a guaranteed minimum selling price and/or profit; access to cheap or free medical treatment; provision of a pension fund for when people retire. In addition to encourage people to live and work in an area they will want access to shops, entertainment and an education system.

Money from agricultural enterprises has traditionally been used to help pay for many of the cost of running the village as well as building and maintaining roads, water, gas and power. Except for the inflow of this money into the local community the services required to maintain the community could not be provided. Recently however, the flow of funds coming from such enterprises has been reduced putting a strain on the social and economic fabric of the villages.
In the complex development programme of the Ukrainian village to 2015 considerable attention is given to the social development of the village. In particular it foresees:

- the classification of social standards to best meet the needs of the rural population;
- provide the necessary infrastructure to allow people to settle in their local community;
- ensure greater cooperation between central, regional and local government to tackle the social problems faced by villages in Ukraine;
- encouraging the development of enterprises in the villages to ensure much needed local employment is made available.

There already exists a public policy model that Ukraine can follow for the sustainable development of the rural community. This model SAPARD was

drawn up in Central-Eastern Europe. It covers the building of the local road networks, provision of water and sewage management as well as areas such as waste managements systems. The model encompasses the principles of the free market with tendering for the various projects on a competitive basis. In addition, it assumed that the vast majority of the projects could be self financing.

Competition and public policy objectives do not always go hand in hand. For instance it may be desirable to have an increased rail network to facilitate the shipment of agricultural products to market. Most likely in the early years there will not be enough volume of traffic necessary to give an adequate return on the required investment. This may however hold significant long term social and economic benefits.

In addition to the economic and social policies consideration needs to be given to environmental impact seeking to increase agricultural production on the ecology of Ukraine. In particular look at and evaluate the following:

- the general suitability of the land for agriculture. This includes ensuring that there will not be excess soil erosion due to the land being exposed. Any land put under the plough or for grazing may have an impact other areas of land. For instance water run off from areas under crops will be much greater than under dense vegetation or trees. Therefore, changing an area to crops or pasture may result in an increased risk of flooding in another area.;
- the sustainability of using fertilisers. While this may increase crop yields it may destroy the plants and natural habitat of a number of birds and animals. The lack of these creatures can in turn have an adverse impact on the crop yields;
- that the proper legislation is enacted protect the most vulnerable ecological environments. Areas of outstanding natural beauty can have a much greater economic аrd social benefit left in their natural state that developed for agriculture.

Practice has shown that there is not one universally accepted method to improve agricultural development. In many ways every counrty faces its own unique set of challenges. As such the lessons learnt and experienced gained from other countries may be a great help but Ukraine must in the end find many of its own answers to the challenges it will face.

4.4. Concluding remarks

Over the last few years in Ukraine there have been great strides made in the science of agriculture as well as the increased use of the methods of best practice. This has allowed for an increase in the yield and the quality and consistency of the crops being produced. However this scientific innovation and progress has almost in its entirety been limited to enterprises of a certain scale. There has been almost no "trickle down effect" in the methods of production used to the smaller scale ventures.

A determination is needed on the part of all levels of government, enterprise as well as academia to make sure the rural economy is able to follow the success that has already been achieved with the larger enterprises. To do this we can follow the European model of agricultural development giving support at the local and regional as well as targeting help to particular micro areas.

Improving the economic performance of rural agriculture as well as contributing to Ukraine's output will give social and demographic stability to rural areas, improve the social fabric of these areas and give a better quality of life to the rural population.

Perhaps above all though Ukraine must system of checks, certification and tractability at all levels of food production. While the production of a good, healthy quality product can open up new markets that reputation can easily be lost if the high standards are not maintained. This in turn would have a major impact on the progress and development of the rural economy.

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5. The assessment of quality and price competition strategies in Polish trade of agri-food products

5.1. Initial remarks

The assessment of quality and price competition strategies in Polish trade of agri-food products, which is the subject of this article, is a new research thread of a task titled: "Monitoring of the state of competitiveness of Polish food producers" implemented under the Multi-annual programme "Competitiveness of Polish food economy in the context of globalisation and European integration" The main objective of the works conducted under the task is to formulate assessments, monitor and forecast changes in the Polish food sector, resulting from the progress of European integration and taking place under the global changes. The research methodology used in this task is currently updated and supplemented by new elements and areas of research [Szczepaniak 2011].

This article attempts to determine the basis of competitiveness of the Polish agri-food export, i.e. it aims at answering the question what was the fundament of the international competitiveness of the Polish agri-food sector so far. Were lower production costs (cost strategy) the basic tools of competition, since they allowed to offer lower product prices, or was it because the entities rather used non-price competitive instruments, including broadly-conceived product quality (differentiation strategy)? In other words, whether Poland used a competitive advantage in production costs and exported lower quality, but affordable goods, or, due to the strong level of trade links to the EU countries, it tried to compete in high quality segments, considering them to be more promising?

5.2. Methodology

One of the method of competitiveness analysis recently used in the European Union is quality and price method proposed by K. Aiginger [1997: 571-592], which uses the so-called "weight-price" ratio, being in fact the method of analysing the form of competition on international market. The method consists in assessment of trade features from the perspective of absolute, and non-comparative advantages of the country over foreign countries in different fields of economy, especially in the field of industrial production [Burzyński 2000: 304].

For the analysis of the forms of competition on international market, K. Aiginger [1997] proposed to use two measures of competitiveness i.e. relationship between unit price in export and foreign price units in import, and the balance of trade exchange in terms of quantity. For the purpose of the present analysis the measures were defined as follows [Ambroziak and Błaszczuk-Zawiła 2011]:

1. The relationship between unit values (UV) of prices in export and unit values of prices in import, calculated according to the following formula:

$$UV_k = \frac{\sum_{i=1}^{n} \frac{V_i^{ex}}{Q_i^{ex}} \cdot \frac{V_i^{ex}}{\sum_{i=1}^{n} V_i^{ex}}}{\sum_{i=1}^{n} \frac{V_i^{im}}{Q_i^{im}} \cdot \frac{V_i^{im}}{\sum_{i=1}^{n} V_i^{im}}},$$

where:

UV_k – the relationship between the price in export and price in import of the *k*-th group of goods (here: HS section),

V_i^{ex}, Q_i^{ex} – respectively, the value and the volume of Polish export to a given group of countries (EU-15, EU-12, non-EU-27 states) or to the world market,

V_i^{im}, Q_i^{im} – respectively, the value and volume of Polish import from a given group of countries (EU-15, EU-12, non-EU-27 states) or generally from the world,

i – the group of products according to HS classification,

n – the number of products in *k*-th group of goods.

From the perspective of the used analysis method it is important whether the relationship between prices in export and prices in import is higher or is equal to one, possibly lower than one.

2. The balance of the foreign trade (*Sq*) in volume terms, calculated according to the following formula:

$$Sq_{kk'} = Q^{ex}_{kk'} - Q^{im}_{kk'},$$

where:

$Sq_{kk.}$ – the balance of the exchange for the *k*-th group of goods (here – HS section) in Polish trade with the group of *k'* countries (here: the world, EU-15, EU-12 and non-EU-27 states),

$Q^{ex}_{kk'}$ – the volume of the Polish export for *k*-th group of goods with the *k'* group of countries,

$Q^{im}_{kk'}$ – the volume of the Polish import for *k*-th *group* of goods with the *k'* group of countries,

k – group of goods,

k' – group of countries.

A symbol of exchange balance in the used method is very interesting, i.e. in practise – if it is positive or equal zero or negative.

Common application of both of those measures, known as "weight-price" ratio, could be graphically expressed in the form of the so-called competitiveness matrix. The relationship of prices *(UV)* can be higher or equal one ($UV \geq 1$) or lower than one ($UV < 1$). The quantitative balance of turnover (Sq) can be positive or equal 0 ($Sq \geq 0$) or negative ($Sq < 0$). On the basis of the list of values of these two competitiveness measures the goods being the object of foreign trade of a given country can be divided into four segments (Table 1):

1. Segment I – contains groups of goods for which the relationship between prices in export and prices in import is higher than one or equals one, and the balance of turnover in physical units is positive or equals zero, which implies the **efficient strategy of quality competitiveness**.
2. Segment II – includes those groups of goods, for which the relationship between prices in export and prices in import is lower than one, and the balance of turnover in physical units is positive or equals zero, which means dominance of the **efficient strategy of low price competitiveness.**
3. Segment III – contains group of goods for which the relationship between prices in export and prices in import is higher or equals one, and the balance of turnover in physical units is negative, which indicates the **potentially efficient strategy of quality competitiveness**.
4. Segment IV – includes those groups of goods, for which the relationship between prices in export and prices in import is lower than one, and the balance of turnover in physical units is negative, which indicates the advantage of the **inefficient strategy of lower price competitiveness**.

Table 1. Competition strategies according to K. Aiginger

	$UV < 1$	$UV \geq 1$
$Sq \geq 0$	**II. Efficient strategy of low price competitiveness**	**I. Efficient strategy of quality competitiveness**
$Sq < 0$	**IV. Non-efficient strategy of low price competitiveness**	**III. Potentially efficient strategy of quality competitiveness**

Source: Own compilation of Ł. Ambroziak on the basis of: K. Aiginger, Unit Values to Signal the Quality Position of CEECs, [in:] The Competitiveness of Transition Economies (coordinator Y. Wolfmayr), OECD proceedings, WIFO, WIIW, OECD 1998, pp. 93-121.

Hypothesis adopted by K. Aiginger [1997: 575-576] was as following: If the values of the units (UV ratio) reflect the costs (prices), and products are homogeneous, then the countries with lower costs (prices) should be net exporters, and countries with high costs should be net importers. If the country is a net exporter in a trade of a given group of goods (despite the higher unit value) it must be caused by quality differences in the listed goods. This hypothesis was formulated assuming that demand on international market is flexible". According to the methodology proposed by K. Aiginger the entire stream of exported products can be thus assigned to one of four segments of the above-mentioned matrix. It allows to conclude what are the foundations of the given country's competitiveness, while *Sq* meter provides information about the effectiveness of adopted form of competition [Daszkiewicz 2008].

The analysis of quality and price competition strategies in Polish agri-food trade was based on trading data taken from WITS database – *World Integrated Trade Solution,* expressed in USD. The conducted analysis covers, the 2000-2010 period, i.e. both the period directly before the EU enlargement, as well as the first years of our membership in the EU.

5.3. The quality and price indicators in Polish agri-food trade – general trends

In the first years of our membership in the European Union (2004-2010), as regards the overall Polish agri-food trade the efficient strategy of quality competitiveness was typical of the following groups of goods (Table 2):

- meat and edible meat offal,
- products of meat, fish and seafood,
- preparations of cereals; pastrycooks' products.

The Polish trade exchange in those sections was characterised by higher export than import prices, and, at the same time, the volume of goods exported from Poland was higher than those imported to Poland. The above-mentioned groups of products has been characterised for many years (also in 2000-2003 i.e. before the accession to the EU) by exchange based on efficient strategy of quality competitiveness. In 2004-2008 and 2010 – the above-mentioned strategy was the basis of the exchange of sugar and sugar confectionery, and since 2009 it has been present in the trade of tobacco and tobacco products. In 2003-2010 the ratio of average export price to import price for fruit and vegetable preserves significantly decreased, which resulted in the change of competition in trade of these products from the efficient strategy of quality competitiveness to the strategy of low price competitiveness.

In 2004-2010 the efficient strategy of low price competitiveness was the basis of the exchange in the following groups of goods (Table 2):

- dairy produce,
- miscellaneous edible preparations.

The Polish trade in those sections was characterised by lower prices in export than in import, with higher volume of goods exported from Poland than imported to Poland. Achieving the positive weight balance of trade in the above-mentioned groups of goods was possible due to competitive price of the exported products. In case of the dairy products efficient price competition strategy was also the basis of exchange in the pre-accession period (2000-2003).

As for sections with potentially efficient strategy of quality competitiveness both in pre-accession period, as well as in the first years of our membership the following groups of goods can be named (Table 2):

- fish and seafood,
- coffee, tea and spices,
- milling and starch products,
- cocoa and cocoa preparations,
- residues; prepared animal fodder.

The prices in Polish export of the above-mentioned products were higher than in import, at the same time, the volume of goods exported from Poland was lower than those imported to our country. A change in the competition strategy of the above-mentioned groups of products should not be expected in the nearest future. Export of those products is characterised by high import intensity, which makes that each increase in foreign sale implies an increase in import of raw materials and semi-finished products of pro-export character.

Table 2. Quality and price ratio in Polish agri-food trade in 2000-2010 (according to HS sections)

Description of HS section	2000-2003	2004-2008	2009	2010
Agricultural products				
Live animals	II	II	II	IV
Fish and seafood	III	III	III	III
Vegetables	II	I	II	II
Fruit and nuts	III	IV	II	IV
Coffee, tea and spices	III	III	III	III
Cereals	IV	IV	II	II
Oil seeds and oleaginous fruits	II	II	IV	II
Food industry products				
Meat and edible meat offal	I	I	I	I
Dairy produce	II	II	II	II
Products of the milling industry; malt; starches	III	III	III	III
Animal or vegetable fats and oils	IV	IV	IV	IV
Preparations of meat and fish	I	I	I	I
Sugars and sugar confectionery	II	I	III	I
Cacao and cacao preparations	III	III	III	III
Preparations of cereals; pastrycooks' products	I	I	I	I
Preparations of vegetables, fruit	I	I	II	II
Miscellaneous edible preparations	IV	II	II	II
Beverages, spirits	III	IV	IV	IV
Residues; prepared animal fodder	III	III	III	III
Tobacco and manufactured tobacco substitutes	III	III	I	I

Note: I – efficient strategy of quality competitiveness, II – efficient strategy of low price competitiveness, III – potentially efficient strategy of quality competitiveness, IV – non-efficient strategy of low price competitiveness.

Source: calculation of Ł. Ambroziak on the basis of WITS-Comrtade database, own compilation.

In 2004-2010 non efficient strategy of low price competitiveness characterised the Polish trade in the following groups of goods (Table 2):

- animal or vegetable fats and oils,
- beverages, spirits.

The trade exchange between those groups of goods was characterised by lower price in Polish export than in import, In case of animal or vegetable fats or oils the situation was sustainable because it lasted since 2001.

In 2000-2010 favourable changes in competition strategy[17] in Polish agri-food trade in total took place in the following HS sections (Table 2).

- cereals – the change from the inefficient strategy of low price competitiveness (IV) to efficient strategy of low price competitiveness (II),
- sugars and sugar confectionery – the change from the efficient strategy of low price competitiveness (II) to efficient strategy of quality competitiveness (I),
- tobacco and tobacco products – the change from potentially efficient strategy of quality competitiveness (III) to efficient strategy of quality competitiveness (I).

The change in sugars and sugar confectionery is especially noteworthy. While the positive weight balance of trade in those products in pre-accession period was the effect of the price competition of exported products, it later generally resulted from quality competition of exported products. In addition, higher prices in export than in import of tobacco and tobacco products, and at the same time quality competition in exporting those products, made it possible to achieve positive weight balance of trade in those products in 2009-2010.

Unfavourable changes in competition strategy in the period were noted for the following HS sections:

- live animals – the change of efficient strategy of quality competitiveness (III) to non-favourable strategy of low price competitiveness (IV),
- fruits and nuts, beverages and spirits – the change of potentially efficient strategy of quality competitiveness (III) to non-favourable strategy of low price competitiveness (IV),
- fruits and fruit preserves – the change of efficient strategy of quality competitiveness (III) for non-favourable strategy of low price competitiveness (II).

It should be especially emphasized that after Poland's accession to the European Union, the occurrence of positive weight balance in preparations of fruit and vegetables trade in analysed period was no longer the effect of quality competitiveness in those goods export, and became the result of price competitiveness. Moreover, price competitiveness in live animals export has become non-efficient in achieving the positive weight balance of trade turnover.

[17] The analysis includes only those changes that were lasting, it means that some groups of goods were omitted because their competitive strategies often changed. As the favourable change in competitive strategy is adopted, the change of the strategy resulted from the improvement of at least one of above mentioned competition measures (balance in physical quantities and/or the relationship of export prices and import prices), while as the unfavourable change is adopted a change of strategy, which results from the deterioration of at least one of these two measures of competitiveness.

5.4. Quality and price ratio in agri-food Polish trade with each group of the EU countries

The analysis of quality and price ratios in agri-food trade with individual groups of the EU countries shows that in 2010, the competition strategies in trade with individual groups of countries (EU-15, EU-12, non-EU-27) were not identical to those in total agri-food trade in any of the sections (Table 3). This shows the clear differences in competition strategies on different markets.

Table 3. Competition strategies in Polish agri-food trade with individual group of EU countries in 2010 (according to HS sections)

Description of HS section	Total	EU-15	EU-12	Non-EU-27 countries
Agricultural products				
Live animals	IV	IV	II	II
Fish and seafood	III	I	III	III
Vegetables	II	III	II	II
Fruit and nuts	IV	III	II	II
Coffee, tea and spices	III	III	I	III
Cereals	II	II	III	II
Oil seeds and oleaginous fruits	II	II	III	III
Food industry products				
Meat and edible meat offal	I	III	II	II
Dairy produce	II	II	I	II
Products of the milling industry; malt; starches	III	IV	III	II
Animal or vegetable fats and oils	IV	IV	I	III
Preparations of meat and fish	I	I	II	I
Sugars and sugar confectionery	I	III	I	I
Meat and meat preparation s	III	III	I	I
Preparations of cereals; pastrycooks' products	I	III	I	I
Preparations of vegetables, fruit	II	I	I	IV
Miscellaneous edible preparations	II	II	I	II
Beverages, spirits	IV	II	IV	II
Residues; prepared animal fodder	III	II	III	III
Tobacco and manufactured tobacco substitutes	I	I	I	III

Note: as in Table 2.
Source: as in Table 2.

Table 4. Quality and price ratio in Polish agri-food trade with EU-15 countries in 2000-2010 (according to HS section)

Description of HS section	2000-2003	2004-2008	2009	2010
Agricultural products				
Live animals	II	II	IV	IV
Fish and seafood	III	I	I	I
Vegetables	I	I	I	III
Fruit and nuts	III	III	III	III
Coffee, tea and spices	III	III	III	III
Cereals	IV	IV	II	II
Oil seeds and oleaginous fruits	II	II	II	II
Food industry products				
Meat and edible meat offal	I	I	III	III
Dairy produce	II	II	II	II
Products of the milling industry; malt; starches	III	III	IV	IV
Animal or vegetable fats and oils	III	IV	IV	IV
Preparations of meat and fish	I	I	I	I
Sugars and sugar confectionery	II	II	III	III
Meat and meat preparation s	III	III	III	III
Preparations of cereals; pastrycooks' products	III	III	III	III
Preparations of vegetables, fruit	I	I	I	I
Miscellaneous edible preparations	IV	IV	II	II
Beverages, spirits	IV	II	II	II
Residues; prepared animal fodder	III	III	II	II
Tobacco and manufactured tobacco substitutes	III	I	I	I

Note: as in Table 2.
Source: as in Table 2.

Since the EU-15 countries are the most important market for the Polish agri-food products and the biggest supplier of those products to Poland (their share in the agri-food export and import in 2010 amounted to 59%), competition strategies in the agri-food trade in total were similar to the strategy of trade with the EU-15 states. Similarity of the competition strategy appeared in nine of the analysed HS sections.

The comparison of the competition strategy in trade with each group of countries in 2010 shows that large similarity of competitive ways occurred in the Polish export to the EU-12 countries and to non-EU-27 countries (in 2010, the same strategies were typical of as much as ten HS sections). On the other hand,

in export to the EU-15 and EU-12 the same competitive ways were noted only in case of two HS sections.

From the analysis of the quality and price ratio in Polish trade with individual groups of countries results that in the first years of Polish membership in the European Union – in comparison to pre-accession period – there was a positive change in competition strategy in the following groups of goods (Tables 4-6):

a) EU-15
- fish and seafood,
- cereals,
- sugars and sugar confectionery,
- miscellaneous edible preparations,
- beverages, spirits,
- residues; prepared animal fodder,
- tobacco and manufactured tobacco substitutes;

b) EU-12
- live animals,
- cereals,
- other vegetable materials,
- animal or vegetable fats and oils;

c) Non-EU-27 countries
- fruit and nuts,
- cereals,
- oil seeds and oleaginous fruits,
- animal or vegetable fats and oils,
- sugars and sugar confectionery,
- cocoa and cocoa preparations.

Unfavourable changes of competition strategy in the analysed period were noted in a trade of goods in the following sections (Tables 4-6):

a) EU-15
- live animals,
- meat and edible meat offal,
- products of the milling industry; malt; starches,
- animal or vegetable fats and oils;

b) EU-12
- live animals,
- fruit and nuts;

c) Non-EU-27 countries

- oil seeds and oleaginous fruits,
- dairy produce,
- products of the milling industry; malt; starches,
- preparations of vegetables, fruit,
- beverages, spirits.

Table 5. Quality and price ratio in Polish agri-food trade with EU-12 countries in 2000-2010 (according to HS section)

Description of HS section	2000-2003	2004-2008	2009	2010
Agricultural products				
Live animals	III	II	III	II
Fish and seafood	II	I	I	III
Vegetables	II	I	II	II
Fruit and nuts	I	II	II	II
Coffee, tea and spices	I	I	II	I
Cereals	IV	III	III	III
Oil seeds and oleaginous fruits	III	III	III	III
Food industry products				
Meat and edible meat offal	II	II	II	II
Dairy produce	I	I	I	I
Products of the milling industry; malt; starches	III	III	III	III
Animal or vegetable fats and oils	III	I	II	I
Preparations of meat and fish	II	II	II	II
Sugars and sugar confectionery	I	I	I	I
Meat and meat preparation s	I	I	I	I
Preparations of cereals; pastrycooks' products	I	I	II	I
Preparations of vegetables, fruit	I	I	I	I
Miscellaneous edible preparations	I	I	I	I
Beverages, spirits	IV	IV	IV	IV
Residues; prepared animal fodder	III	III	III	III
Tobacco and manufactured tobacco substitutes	I	I	I	I

Note: as in Table 2.
Source: as in Table 2.

Table 6. Quality and price ratio in Polish agri-food trade with non-EU-27 countries in 2000-2010 (according to HS section)

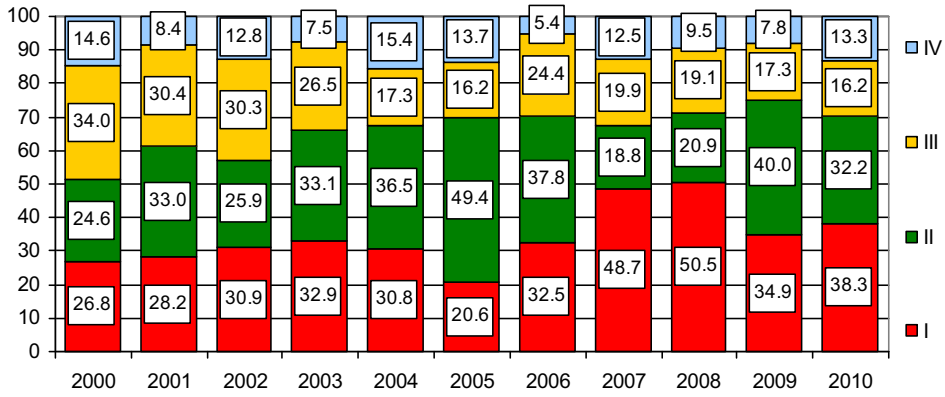
Description of HS section	2000-2003	2004-2008	2009	2010
Agricultural products				
Live animals	II	II	II	II
Fish and seafood	III	III	III	III
Vegetables	II	II	II	II
Fruit and nuts	IV	IV	II	II
Coffee, tea and spices	III	III	IV	III
Cereals	IV	II	II	II
Oil seeds and oleaginous fruits	II	III	III	III
Food industry products				
Meat and edible meat offal	II	II	II	II
Dairy produce	I	II	II	II
Products of the milling industry; malt; starches	I	I	II	II
Animal or vegetable fats and oils	IV	III	IV	III
Preparations of meat and fish	I	I	I	I
Sugars and sugar confectionery	II	I	I	I
Meat and meat preparations	III	III	III	I
Preparations of cereals; pastrycooks' products	I	I	I	I
Preparations of vegetables, fruit	III	II	IV	IV
Miscellaneous edible preparations	II	II	II	II
Beverages, spirits	I	I	I	II
Residues; prepared animal fodder	III	III	III	III
Tobacco and manufactured tobacco substitutes	III	III	III	III

Note: as in Table 2.
Source: as in Table 2.

5.5. The Polish agri-food export structure according to the competition strategy

The quality and price method can be used also to divide the export into four groups of goods which are characterised by one of the four competition strategies highlighted with this method, On Figure 1 the structure of the total Polish agri-food export in 2000-2010 is presented. It resulted from the analysis of that structure that after the Polish accession to the European Union the changes of this structure were bigger than in pre-accession period, and they were taking place mainly in those parts of the export, which were characterised by efficient strategy of quality competitiveness or efficient price competition strategy.

Figure 1. The structure of Polish agri-food structure in total according to the used competition strategies in 2000-2010 (percentages)

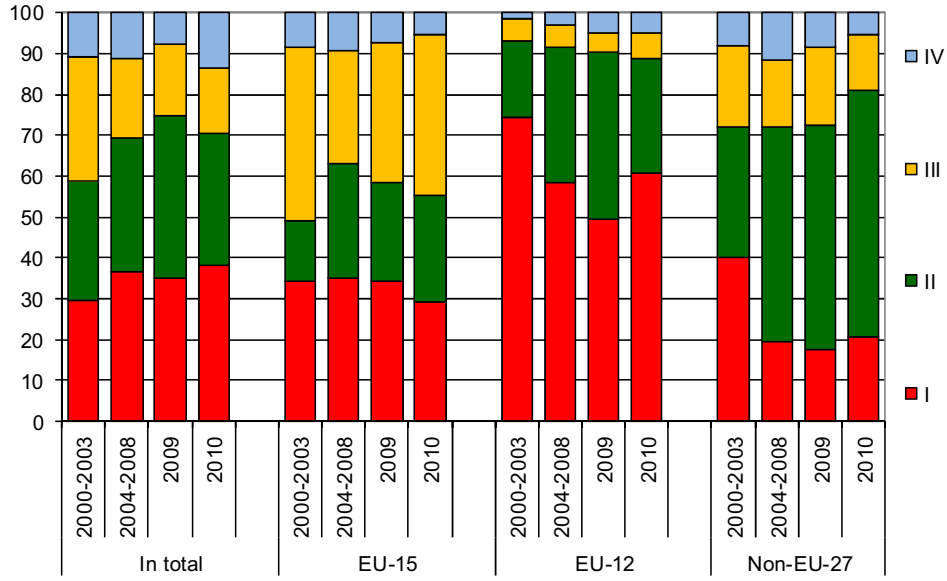


Note: as in Table 2.
Source: as in Table 2.

In the first years after the accession (2004-2008) – as compared to the pre-accession period (2000-2003) – the share of Polish agri-food export in total, which is the result of using the efficient strategies of quality and price against a potentially efficient strategy of quality competitiveness has grown. In the period of economic crisis (2009) the importance of the efficient strategy of low price competitiveness significantly increased, and in 2010 it decreased to the level noted in the 2004-2008 period. As a result of those changes, in 2010, almost 40% of agri-food export can be attributed to the use of the strategy of quality competitiveness (by 8 p.p. more than in pre-accession period), and slightly more than 32% – efficient strategy of low price competitiveness (by 3 p.p. more than in pre-accession period).

There were significant differences in geographical structure of the export according to the ways of competition (Figure 2). As compared to the agri-food export structure in total, the efficient strategy of quality competitiveness has far greater importance in relationship with the EU-12 countries, efficient strategy of low price competitiveness – with non-EU-27 countries, and potentially efficient strategy of quality competitiveness – in export to the EU-15 countries.

Figure 2. The structure of Polish agri-food export with specific groups of the countries according to used competition strategies in 2000-2010 (percentages)



Note: as in Table 2.
Source: as in Table 2.

After the Polish accession to the European Union, the biggest changes were noted in the structure of agri-food export to the EU-12 countries and non-EU-27 countries. Despite the decrease in the importance of the strategy of quality competitiveness , still more than 60% of agri-food export to the EU-12 in 2010 was the effect of using this way of competition. In export outside the EU there were only 21% (by 20 p.p. less than the average in 2000-2003). Decrease in the share of the efficient way of quality competition took place in favour of the export which had the basis of efficient strategy of price competitiveness. Consequently, in 2010 60% of agri-food export to non-EU-27 countries resulted from using this strategy. In comparison to the pre-accession period, the share increased twice.

Moreover, relatively stable structure of the Polish agri-food export to the EU-12 countries and non-EU-27 countries (taking into account annual data, non-averaged) allows to make an assumption that used sales strategies on those markets are permanent. The opposite situation characterised the exchange with the EU-15 countries. Relatively instable structure of export on the market may affect the instability of used competition strategies.

5.6. Final remarks

The assessment of Polish agri-food trade competitiveness made on the basis of quality and price method, based on the Karl Aiginger conception, showed that in the first years after the accession (2004-2008) – as compared to the pre-accession period (2000-2003) – the share of Polish agri-food export, resulted from using efficient strategy of quality and price competitiveness increased while the potentially efficient strategy of quality competitiveness decreased.
In the period of economic crisis (2009) the importance of efficient strategy of low price competitiveness significantly increased, but in 2010 decreased and returned to the level from the 2004-2008 period.

In 2010 as a result of those changes almost 40% of agri-food export can be attributed to the use of the quality competition strategy (by 8 p.p. more than in pre-accession period), and slightly more than 30% – efficient strategy of low price competitiveness (by 3 p.p. more than in pre-accession period).
Efficient strategies of quality competitiveness were typical for the trade in food industry products, they were significantly more rare in trade in agricultural products. In agricultural sector the trade development was the effect of using efficient strategies of price competitiveness and potentially efficient strategies of quality competitiveness.

In the first years of the membership in the European Union, achieving the surplus of the turnover from trade of agri-food products was the effect of quality competition in export of such products, as: meat and edible meat offal, products of meat, fish and seafood and preparations of cereal and pastrycooks' products (efficient strategy of quality competitiveness).
Poland had also competitive advantages (positive weight exchange balance) in trading miscellaneous edible preparations and dairy products and vegetables. Achieving the surplus in turnover from the trade of those products was possible due to price competition of exported goods (efficient strategy of low price competitiveness).

In some groups of products, despite achieving higher export than import prices, Poland failed to obtain the competitive advantage, expressed in positive weight balance of change (potentially efficient strategy of quality competitiveness). They were: fish and seafood; coffee, tea and spices; cacao and cacao preserves; residues, prepared animal fodders; and products of the milling industry.
The most unfavourable situation characterised trade in beverages and spirits and trade in animal and vegetable fats and oils. Poland imported more of those products than before, and additionally the prices in the export were lower than prices in import. It means the inefficient strategy of low price competitiveness.

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6. The dynamic of agrifood systems and institutional impacts on Romanian vegetable producers

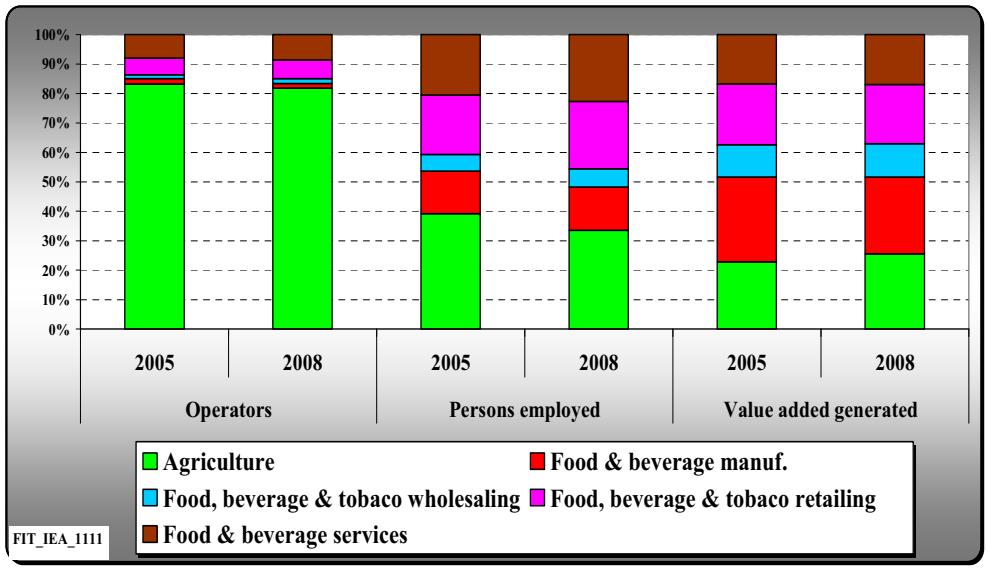
6.1. Introduction

In principle, a performing agro-food economy presupposes the existence of certain functional agro-food chains, in which each link (segment) should retain, out of the total productivity gain (measured by the differential value between the producer of agricultural raw materials and the final consumer), what it deserves on the basis of the effort made to generate value added [Toderoiu 2012].

In order to reveal the extent to which the organization of the agro-food economy features potential to generate internal or external competitiveness, we consider it useful to present a brief comparative diagnosis between Romania and EU-27 average, from the perspective of multi-criterion structure of the agro-food chain, in two reference years (2005 and 2008) for which the most recent relevant statistical data are available (Figure 1).

From the perspective of the criterion "number of enterprises" (economic operators), at EU-27 level, structural changes of the agro-food chain can be noticed in 2008 compared to 2005, in the sense of the absolute decrease (from 14.4 mil. to 13.7 mil.) and relative decrease (from 83.2 % to 81.8%) of the economic operators in agriculture, while the shares of the other three links in the chain (wholesale trade, retail trade and public food consumption) increased, on a cumulative bases, by 1.6 percent. The first post-harvest segment (agro-food processing) also lost 0.2 percent; thus, we can say that practically the relative decline of the cumulative share (by 1.6 percent) of the economic operators in agriculture and processing was transferred to the other three segments.

Figure 1. Multi-criterion structure of the agrifood chain
in the European Union,
2005 – 2008



Source: own calculations, on the data from "Food - from farm to fork statistics", Eurostat Poketbooks, 2011 edition

From the perspective of the criterion "number of employees", in three years' time (2006-2008), the share of the segment "agriculture" decreased by 5.7 percent, and these percentage points are distributed to the other four segments of the agrifood chain.

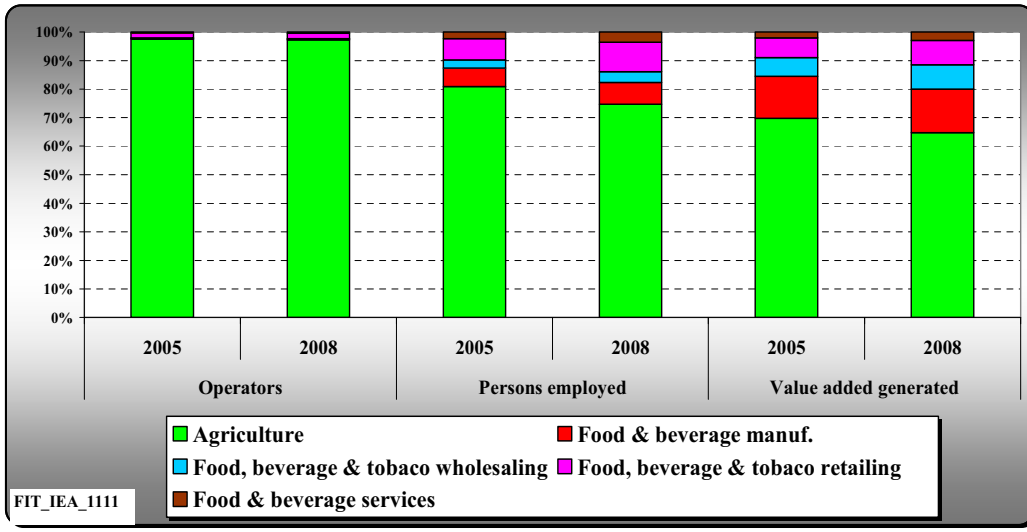
The diminution in number of the economic operators from the first segment of the chain (agriculture), in the conditions of a likely relative release of labour force, on the basis of productivity increase, induced a favourable effect in the EU agro-food system, i.e. the primary production of agricultural raw materials generates value added gain, which leads to the increase of this segment share (by 2.8 percent in 2008 compared to 2005) in the third criterion of analysis ("generated value added").

Romania went through the transition and pre-accession period with a very rudimentary "agrarian – structural endowment", the excessive land fragmentation and the still unclear land tenure or land ownership status representing constraints to the plenary manifestation of the technical – organizational and managerial progress factors; the unrestricted manifestation of these factors would also make it possible for our country to experience the situations characteristic to countries with modern economies and agricultural sectors, in which a decreasing number of holdings and labour input are able to increasingly provide the neces-

sary agrifood products for the population, under increasingly restrictive competitiveness conditions.

Unfortunately the multi-structural structure picture of the agrifood chain in Romania looks entirely different from the overall picture of EU-27 (Figure 2).

Figure 2. Multi-criterion structure of the agrifood chain in Romania, 2005- 2008



Source: own calculations, on the data from "Food - from farm to fork statistics", Eurostat Poketbooks, 2011 edition

Briefly, between the two reference years (2005 and 2008), the structural changes in the configuration of certain performing agro-food chains through competitiveness were not produced yet; we rather experience the persistence of certain trends that reduce the multiplying effects of value added generated by the sector throughout the national economy. Otherwise, no full explanation could be found for the diminution of the share of agriculture in total economic operators of the agro-food chain from 97.5% to 97.2% in three years' time, i.e. a non-significant decrease. Furthermore, the problem is that the diminution of the share (by 0.3 percent) of the segment agriculture in total operators of the agro-food chain was "outflanked" by a simultaneous diminution by 6.2 percent of the share of this segment in total labour input that consequently led not to a plus of value-added generation, but rather to a minus (of 5.0 percent).

The other four segments of the agrifood chain, whose cumulated shares with regard to the economic operators, accounted for 2.5% (2005) and 2.8% (2008), i.e. a very small number of non-agricultural economic operators put to work 19.1% of the employees from the entire chain, in the year 2005, and 25.3%

in the year 2008, these generating 30.3% (2005) and 35.3% respectively (2008) of the value added from the Romanian agro-food chain.

Therefore, the brief diagnosis of the structural changes produced in the agrifood chains confirm certain partial conclusions formulated in other previous segments of our scientific approach.

In this context, the agricultural sector – in particular, the vegetable sector - finds itself in a relatively weak negotiation position due to the low level of concentration from which farmers approach the market. This is a weakness that can only be overcome by resorting to collective actions. Further strengthening of the coordination and collaboration action between various actors of the supply chain can come from the collective actions (organizations and agreements), thanks to which opportunistic behaviour may be countered and reduced, while encouraging collective behaviour [Dell'Aquila et all 2011]. Collective actions may constitute a valid and useful counterweight by taking up a strategic role in restoring balance to market relationships, acting as a contractual power and for redistributing added value, and contributing towards models of cooperative behaviour.
Romania's production of vegetables is fragmented, mostly coming from the individual households (90%) and only 10% from the legal farms. The Romanian vegetable chain is characterized by uncertainty in terms of what vegetable to produce and where to sell and, it negatively impacts the farmers' revenues and investment decision. At present, in Romania 42% of grocery sales are made through modern retail chains out of which 25% is represented by hypermarkets, 9% supermarkets and 8% discounting stores. At the same time, in the recent years an increase of consumers' appetite for doing shopping in modern retailers has been noticed, i.e. 70% of consumers in the urban areas. In this context it is important to know whether collective actions are important for farmers to face the new challenges of modern retailers to fulfil their requirements in terms of quantity, quality and frequency of deliveries. The paper employs a qualitative and quantitative analysis in order to assess the probability of farmers to participate in institutional arrangements such as collective actions. In this regard, the objective of the paper is to reveal the main characteristics of participating in collective actions in order to better cope with the high level of requirements imposed by retail chains to small producers which has been most often seen as a barrier to commercialization. At the same time, the participation in collective action such as producers and organizations groups may play a role in improving the institutional arrangements with the retail chains.

6.2. Review of literature

In addition to the historical problem of low prices and profits faced by farmers, agrifood systems are undergoing profound changes, requiring institutional adaptation [Hobbs, 2004]. One of the core ideas of New Institutional Economics (NIE) is that institutions matter, and therefore, they are important to lower transaction costs [North, 1995 and Williamson, 2000]. Collective action can exist in different forms such as informal networks, cooperatives, producers groups, organizations and strategic alliances. In this research, special attention is given to collective arrangements especially to the producers groups that might facilitate the participation of small farmers in the retail chains. Regarding collective action [Bardhan 1989] emphasizes the high propensity of opportunism and free-riding problems in collective actions that may limit the development of institutions to bring common benefits. The author mentions the problems of unbalanced power among agents that NIE seems to ignore in the development of institutions. It is expected that collective actions in the form of institutional and organizational arrangements, help reduce transaction costs. Collective forms of organization can contribute to increasing bargaining power of farmers to negotiate with their clients through the pooling of produce. Similarly, by bringing together resources vegetable producers can access key assets that cannot be acquired on an individual basis.

In the recent years, emerging causes of instability (market price volatility, overproduction, increasing costs of production, stagnating consumptions, growing fruit and vegetable imports as effect of bilateral/multilateral accords) add to structural weaknesses (sector fragmentation, and its weak bargaining power, versus retail concentration and agro-food industry competition), exacerbating the tense relationship in the fruit and vegetable supply chain [Dell'Aquila et all, 2011]. Also, the requirements coming from retail chains have steadily increased. All these requirements may mean further investments that small farms find difficult to realize on an individual basis. In many cases farmers simply do not have the knowledge or the money to make investments in equipment and logistics support to meet these requirements. Ongoing developments of supply chains imply a significant bias towards large farms. This makes collective action among individual farmers a further step to improve their situation. The problem is not only to concentrate supply and give producers a prerequisite necessary to start interacting within modern supply chains, but also to undertake contractual arrangements in order to successfully coordinate with packers, wholesalers and large retailers, with the purpose of optimizing operations, so that production will

comply with demand, in particular with regard to product quality attributes [Fischer et al. 2007; Camanzi et al. 2009].

It is important to note also the role of commodity branch association in organizing the supply chains, but in Romania a country where production is very fragmented and the supply is atomized, and were price volatility is extremely high due to weather variation, Romconserv, the only one commodity inter-professional association in this sector it is far from providing all support required by farmers and other actors in the sector. Commodity associations will not be able to tackle all agrifood chain issues. Indeed, the weight of farmers in the decisions of the association will be limited in a context of increasing agricultural price volatility, commodity associations can become a locus for voicing disagreements.

The sector shows a rate of organization that on average is at a relatively low level and very far from the objective of 60% established by the Common Market Organization: in 2006 it was 34% in the EU-25 and 35% in the EU-15 Agrosynergie [2008a]. After the EU enlargement of 2007 to Bulgaria and Romania, there seems to be an overall decrease, due to an organization rate below 1% in these two countries [Jacquin 2010]. The rate of organization is very heterogeneous among the Member States: it has risen to over 80% only in the Netherlands, Belgium and Ireland. In particular, in the case of the Netherlands the rate of organization is over 100% because of transnational producers' organizations. At the same time, the rate of organization shows a great difference between new and old Member States not only as percentage level, but also in terms of variation: the former (EU-10) varies from 6% in 2004 to 9% in 2007; the latter (EU-15) varies from 32% in 2004 to 39% in 2007 [Jacquin 2010]. For instance, the low negotiation power of Romanian producers and high transaction costs also contribute to the need to establish producers' groups to participate in collective actions. However, at present, in Romania, there are only 35 producers' groups and one organization, whose members total 711 individual farmers and 10 legal farms. Initially, in 2008, 45 producers' groups had been preliminarily recognized, yet in 2011 their licenses were withdrawn, and at present only 35 groups remained. Many farmers are unable to establish producers' groups or to participate in other types of collective actions due to the lack of confidence, bad memories related to communist cooperatives, or lack of willingness to cooperate. At the same time, the National Rural Development Program has a very low absorption of funds for the measure targeting the establishment of producers' groups (Measure 142: Setting up producers groups) and the number of applicants is low. However, the National Rural Development Network, started after signing a

contract in 2010, with a 3-year delay is intended to be a platform for encouraging farmers' participation in different types of collective actions.

6.3. Data and methodology

The paper is based on data provided by 240 farmers located in the S-E region of Romania following a survey conducted in this region in 2011. In total, 240 structured questionnaires were applied to farmers. Interviews were also conducted with 4 supermarkets, including 2 discounters (modern retailers which practice discounted prices) and farmers belonging to 4 producers groups. Among the investigated farmers, 34% of farmers cultivated vegetables on less than 1 ha, 51% of farmers cultivated vegetable for commercialization on areas of 1-5 ha, and 5% of farmers cultivated vegetables on areas between 10 and 50 ha. Due to space limitations, information on questionnaires and more details on the method are available upon request from the author. The sampling method was a random sample carried out in a traditional vegetable area where farmers have a commercial behaviour. Regarding the interviews with the representatives of supermarkets chains, these were chosen randomly based on their willingness to answer to my questionnaire. The 4 producers groups were chosen from a list of 22 producers group who were located in the investigated area. The analysis is both qualitative and quantitative and takes into consideration stakeholder answers to the questions regarding the type of attributes for joining the collective actions. In order to see the determinants of joining farmers in collective actions binary probit and logit models were used. Several proxy variables such as membership fee, number of organization services provided by producers groups, membership heterogeneity (trust in organization), importance of organization for selling (number of potential buyers), performance of organization are used in this research to attempt to measure collective action determinants. Considering the models best fitted for this kind of research, in analysis of dependence when the dependent variable is discrete the most used models are the choice or probability models. According to [Jula 2011], the probit and logit models are different with regard to the specification of their error distribution in the regression equation. In this type of models we admit the existence of a latent (unnoticeable) variable for which we can notice only the dichotomic achievement.

6.4. Results and discussions

The results of qualitative analysis, following the interviews with producers groups, show that the number of farmers participating in collective actions is not very high. The producers groups are mainly composed of small farmers and sometimes legal companies dealing in vegetables are also members of the group. The results reveal that only 20% of their pooled production is sold directly to modern retail chains; the rest is sold to traditional wholesalers and en gross markets 40%, local open market 20% and 20% of the production is sold at farms' gate. Nevertheless, we have to bear in mind that these figures are representative at the level of the interviewed producer groups, while at the whole country level only 5% of vegetable production is sold through producers groups.

According to interviews with retailers the procurement of fruits and vegetables is often still organized at the level of the store which is responsible for the purchases of fruits and vegetables trough contracts with local suppliers (mainly large legal entities or producer groups). However, in some cases also the purchases of vegetables are centralized through a distribution centre. Regarding the support given to farmers by retailers, limited evidence was found of the existence of farm assistance programs offered by supermarkets. Interestingly, all producer group representatives indicate that the most important benefit of contracting with modern retailers or specialized wholesalers is that these partners offer written contracts, while the traditional wholesalers still work with oral contracts. The representatives of the producer group point out that the "shelf fee" can vary between 10 %-15% of the price that the farmer will receive from the modern retailer for his products. The employer organizations and trade unions indicated that it is very difficult for small farmers to deliver to modern retailers because they cannot supply sufficient quantities. They also indicate that the "shelf fees" that modern retailers charge are substantially higher for local producers that are only able to offer small quantities to the modern retailer compared to those delivering large quantities which makes it virtually impossible for small producers to deliver to a modern retailer. Finally, the producers and their representatives also mention that increasing quality standards (requirement of several certificates on chemical use) and the poor packaging and sorting infrastructure are important constraints for small farmers to deliver to supermarkets [Swinnen and Van Herck 2010: 68]. Significant to observe with respect to quality requirements, is that there is no major difference in the quality that supermarkets requested compared to the quality that discounters asked for (both demand extra or/and first class products). Nevertheless they indicate that it is not impos-

sible for small farmers to contract with modern retailers, but they emphasize the importance of cooperation between small farmers such that they are able to deliver sufficient quantities to the modern retailers. There can be an important role in this cooperation for the producer organizations as they already help farmers to connect to the market by providing assistance programs, such extension services and storage facilities, and establishing contacts between farmers and modern retailers. Finally, when discussing the dynamic of agri-food sector and the impact of retail investments on small and large farmers it is important to keep in mind it is primarily in the area of fresh fruits and vegetables that there is a potential direct relationship between the "supermarket" and the "farm". There are farmers that sell to a specialized wholesaler who in turn sell to a supermarket. This is the case of smaller farmers that can produce vegetables but have serious constraints to enter the retail chains by themselves. Other small farmers become members in producers group and therefore rely on collective action to overcome these constraints. These farmers typically receive support from the Romanian Rural Development Program, if they form producers groups. The support is represented by financial help to acquire/build individual assets such as irrigation systems and/or collective assets such as storage facilities with cold storage and transportation to deliver produce to supermarkets. In some cases the participant farmer sell aside the produce thus creating problems for the well functioning of the producers groups and rising the issue of "free riding" problem within collective actions. This is the most typical issues raised among small farmers.

Table 1. Choice of marketing channel and organization by farmers (%)

Marketing Channel	Producer group member		Total
	Yes	No	
Traditional local channels	10.3	44.1	54.4
Retail chains	45.3	0.3	45.6
Total	55.6	44.4	100
Marketing channel	Membership payment		Total
	Yes	No	
Traditional local channels	0.8	9	9.8
Retail chains	52.2	38	90.2
Total	53	47	100

Source: farm survey 2011

When farmers are organized, their probability of participating in the retail chains is significantly increased. One should bear in mind that the figures presented are based on interviews with farmers belonging to producers groups and this is why the results cannot be extended at the national level. Also, the qualita-

tive analysis gives hints that there is a strong propensity for selling aside from the producers group when prices obtained by using alternative marketing channels are higher and the free riding problem appears very often. Even though organization is highly important for participating in the retail chains, there are certain organization measure supports that positively affect farmer participation in the collective actions.

In order to determine the effect of certain services on the probability of participating in the retail chains by the mean of producers group probit and logit regressions are used. In this way the analysis will facilitate to find out the role of collective action in participating in retail chains. The results presented so far suggest the importance of organization for participating in the supply chains. Producers groups provide different kinds of supports to their members; therefore, it is important to identify and assess those supports that really have an effect on the main market channel used by farmers. In this regard, a logit and probit regressions, including organized farmers, in the form of probability of selling to the retail chains as a function of support measures were run. Organizational support regarding inputs and collection and distribution centers is highly significant for participating in supply chains (Table 2).

Table 2. Effects of support measures provided to farmers by producers group

Specification	Probit model		Logit model	
	Coefficient	Z statistic	Coefficient	Z statistic
Credit	0.02	0.05	3.37	0.16
Inputs	1.94	3.74	0.13	3.65
Training and technical support	0.45	1.40	0.85	1.47
Transport	1.09	2.51	1.86	2.51
Collection and distribution	1.42	3.25	2.62	3.15

LR = 237; LL=-18.48; McFadden R2=0.86
Source: results obtained using Eviews N = 240

The variable credit included in the regression is not statistically significant at the five percent level. The non-significant effect of the variable in the model may be explained by the fact that organizations provide these services less frequently. However, this variable is not always oriented to promote farmer participation in the retail chains, as is the case of marketing services and collection and distribution centre services which have a very clear target. Organizations traditionally provide inputs, training, technical assistance and assets oriented to the production process and support for commercialization. As pointed out by Berdegué (2001), traditional agricultural development programs have been focused on "teaching" independent farmers how to increase productivity. Howev-

er, under the new agri-food systems institutional and organizational innovation is needed [Reardon and Barrett, 2000; Pinstrup-Andersen, 2002].

The results obtained suggest that providing input support and collection and distribution facilities are particularly important. Collection and distribution support are mainly associated with negotiation with clients. Small farmers do not negotiate directly with clients such as retail chains for two main reasons. First, individual farmers do not have enough scale to negotiate, and therefore it is too costly for them. Second, for supermarket chains it is difficult (too high transaction costs) to negotiate with a large number of individual farmers. Instead, for farmer and client convenience, farmer representatives such as producers' group administrators of farmer producers' groups do the negotiations. According to the survey, none of the small farmers is selling directly to retail chains, therefore, confirming the importance of collective action to participate in supply chain. Nevertheless, as already stated due to price volatility and some institutional arrangements regarding the position of the organization it may happen that the small farmers sell aside from the contract with the producers group, thus impeding a good functioning of producers groups. Nevertheless, one should not neglect that according to the results for the time being small farmers are benefiting more from input support than from collection and distribution support (table 3). Support for input is associated with help for establishing the crop and obtaining at a fair price all the inputs needed for production. This is an important support because individual small farmers lack managerial skills and bargaining power to negotiate with suppliers in the supply chain. Support for collection and distribution centres is also very important because it allows farmers to bring together their products for selling in the retail chains and improve their bargaining power with buyers. Nevertheless, producer groups may also not represent the best marketing channel for the participation of small farmers in the collective actions when the target of the collective effort is not market driven and when the prices they receive are smaller than what they could get by selling using traditional channels. As already said, there is a high tendency to sell outside producers groups when prices obtained are higher on alternative marketing channels.

6.5. Conclusions

The main results may signal out that there is a certain degree of farmers' participation in collective actions. Nevertheless, at the country level the number of participation in collective actions is extremely reduced. Marketing and collection and distribution centre support offered by organizations have the specific

objective to insert small farmers into the retail chain. From the model results the importance of transportation for choosing the market channels is significant. Many farmers are motivated to sell to middlemen at the farm gate, because the buyer provides transportation. First, transportation is expensive, and second is not always reliable. One of the main premises of NIE is that "institutions matter," and therefore, they can help reduce transaction costs. The results show the importance of collective action for participating in the retail chains. Participating in collective action, and furthermore, being a member of a producer group significantly increases the probability of selling in retail chains, supporting the hypothesis of farmers 'perception that the higher the participation in collective action, the higher the probability of selling in this kind of market. At the same time, the qualitative results suggest that organization itself is not enough to facilitate the participation in the retail chains and many free riding problems occur. The qualitative results reveal that in Romania's case there is a high degree of uncertainty among stakeholders both in terms of institutional arrangements and participation in collective actions. The share of participation in collective actions is higher in case the institutional arrangement is initiated by a larger farm.

Following the EU integration, the vegetable supply chain seems the most negatively affected sector, due to the high share of imports and the farmers' impossibility or incapacity to maintain stable contractual relationship within the chain. In addition, many of them are not able to enter or form producers' groups or participate in other type of collective actions either because of lack of trust or willingness to cooperate. Also, the National Rural Development Program reveals an extremely low absorption of funds for the measure aimed at setting up producers group as well as an extremely small number of applicants.

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7. The status and development perspectives of the agricultural production sector of the Republic of Belarus

Agriculture in Belarus has recently acquired a new development quality – manifested by intensification of production, technical and technological modernisation, comprehensive renewal of the entire production and social infrastructure. It has been possible due to the implementation of the most extensive national programme of transformation and development of the rural areas 2005-2010 and, first and foremost, large-scale investments and transformation of the rural areas. [National Sustainable… 2005].

Table 1. Production dynamics of agricultural products in 2005-2011

Indicator	Year					
	2005	2007	2008	2009	2010	2011
Total, in thousand tons						
Cereals and legumes	6421	7216	9013	8510	6990	8375
Flax fibre	50	39	61	47	46	46
Sugar beet	3065	3626	4030	3973	3773	4485
Rapeseed	150	240	514	612	374	379
Potato	8185	8744	8749	7125	7831	7721
Vegetables	2007	2153	2269	2308	2334	1979
Fruits and berries	382	420	595	692	799	304
Milk	5676	5904	6225	6577	6627	6504
Livestock and poultry for fattening in live weight	1024	1176	1209	1335	1400	1464
Eggs, billion pcs	3103	3228	3312	3430	3536	3752
Per person, kg						
Cereals and legumes	664	755	946	895	737	884
Potato	847	915	918	749	825	815
Vegetables	208	225	241	243	246	209
Fruits and berries	39	44	62	73	84	32
Milk	587	617	653	692	698	687
Meat in slaughter weight	72	85	88	97	102	108
Eggs, pcs	321	338	348	361	373	396

As a result of intensive development of agriculture, the agricultural production volume surged in the last seven years. This has been particularly visible in crops such as sugar beet and rapeseed, and, in stock breeding farms – of meat and milk of all kinds (Table 1). This enabled a dynamic increase in production of cereals and legumes per person by 133.1%; of milk, slaughter meat and eggs by 117.0, 150.0 and 123.4% respectively.

A characteristic feature is the fact that in quantifying terms, the volume of agricultural production grew by 4.4 times in the analysed period, which amounted in 2011 to BYR 55.6 trillion (Table 2).

Table 2. Dynamics of agriculture according to holding category, 2005-2011

Indicator	Year					
	2005	2007	2008	2009	2010	2011
In current prices, BYR billion						
Agricultural production - total	12826	18102	25052	26595	35613	55642
Including						
Agricultural organisations	7914	11696	16958	18495	22960	39431
Agricultural holdings	93	137	216	556	367	748
Individual farms	4819	6269	7878	7874	12268	15463
In %						
Agricultural production - total	100	100	100	100	100	100
Including						
Agricultural organisations	61,7	64,6	67,7	69,6	64,5	70,9
Agricultural holdings	0,7	0,8	0,9	0,8	1,0	1,3
Individual farms	37,6	34,6	31,4	29,6	34,5	27,8

As transpires from the table, in the global production structure, agricultural organisations had the 70.9% share in agricultural holdings/kolkhoz хозяйств 1.3% and individual farms – 27.8%.

Table 3 presents the dynamics of productivity of agriculture, productivity of livestock and poultry of all categories in 2005-2011.

It transpires from the facts quoted above that, as years go by, constant improvement of relative productivity of agriculture is observed. Therefore, productivity of cereals and legumes exceeded 32.1 q/ha, of potatoes, reached over 200 q/ha, of sugar beet – 450 q/ha. Average annual milking per one cow constituted 4500-4700 kg, and average daily growth in farmed animals - 550-600 gram for cattle, over 500 gram for swine.

Table 3. Dynamics of productivity of agriculture, productivity of livestock and poultry of all categories in 2005-2011.

Indicator	Year					
	2005	2007	2008	2009	2010	2011
Productivity of agriculture, q/ha						
Cereals and legumes	28.1	28.5	35.2	33.3	27.7	32.1
Potato	177	212	221	186	214	226
Vegetables	208	220	234	242	247	273
Flax fibre	7.0	5.9	7.8	7.2	7.7	7.5
Sugar beet	316	387	439	450	395	453
Rapeseed	12.3	12.2	18.1	18.0	12.2	12.8
Fruits and berries	41.6	45.9	64.5	75.1	86.3	33.4
Productivity of farmed animals and poultry						
Milking cows, kg	3711	4125	4438	4690	4631	4482
Average daily growth, gram						
Horned cattle	501	521	549	585	607	605
Swine	430	466	493	496	497	513
Poultry	32	33	39	40	42	44
Laying performance of hens	276	289	296	299	303	300

At the same time, plant culture prevails in the development structure of the agricultural production (55.2% average value, 2011). [Agriculture… 2012], though animal production should grow faster than plant production. The above is indicative of the fact that the growth pace of animal culture so far fails to satisfy the existing potential [Husakov 2011].

It should be pointed out, that according to the national programme for constant rural development 2011-2015 [On National… 2011] the Republic of Belarus set itself a cardinal task to significantly improve the volume of export, and widely integrate national agri—industrial sector into a global international food market, which includes optimisation of import and improvement of competitiveness of the national agricultural production. Dynamics of foreign trade and basic types of agricultural production in natural numbers in 2005-2011 has been presented in Table 4.

The data quoted confirm that the most demanded types of Belarusian agricultural production have recently been meat products – 250-300 thousand tons, milk products – almost 3700 thousand tons, and products from poultry farming. Vast majority of export concerns potato products (60-150 thousand tons), vegetable oil (48.3 thousand tons) and vegetable products (over 70 thousand tons). At the same time Belarus, as earlier, is an importer of ready to eat food products and, in particular, fish products (115.4 thousand tons), vegetable oil (107.9 thou-

sand tons), potato products (107.7 thousand tons), vegetable and *bashtan* products (105.2 thousand tons), fruit and berries (289.4 thousand tons).

Table 4. Dynamics of foreign trade and basic types of agricultural production in natural numbers in 2005-2011 thousand tons

Production	Year					
	2005	2007	2008	2009	2010	2011
Export						
Meat and meat products	157.8	133.6	155.7	179.0	254.5	310.6
Milk and milk products	2450.1	2931.1	3050.5	3930.0	3444.2	3442.4
Eggs, million pcs	441.8	437.9	463.5	522.8	551.1	625.5
Fish and fish products	21.4	34.6	39.1	23.1	26.5	32.8
Vegetable oil	21.4	27.9	21.7	81.4	53.7	9.7
Potato and potato products	97.6	105.7	149.4	123.3	137.0	61.0
Vegetable and *bashtan* growing	15.7	30.5	46.4	62.3	59.1	72.5
Fruits and berries	14.4	17.9	10.3	17.9	12.8	52.5
Import						
Meat and meat products	73.5	21.8	68.4	34.0	95.7	118.4
Milk and milk products	45.2	58.1	60.9	52.5	65.8	42.0
Eggs, million pcs	0.3	0.6	1.3	10.4	18.3	24.9
Fish and fish products	192.9	179.0	184.4	139.8	135.7	120.7
Vegetable oil	140.4	138.8	114.6	115.1	123.2	107.9
Potato and potato products	140.1	93.0	65.5	68.6	132.7	82.7
Fruit and vegetable growing	74.2	78.2	81.5	37.7	84.8	105.2
Fruits and berries	228.2	256.0	224.6	224.9	261.8	289.4

In the context presented, it should be pointed out that Belarus fully secures its production safety by basic products of national production. Only traditional products and foods which cannot be produced in the Republic due to objective climate and environmental conditions, as well as economic ones – bashtan cultures, fruits, grapes and others, are imported to the country. At the same time, all key food types on the internal food market are produced locally (milk, meat, eggs, bread and other). By aiming at activation in the international trade, Belarus accepts a certain import of high quality products from the basic and strategic groups of goods to the internal market (meat products, milk products, fish, vegetable oil and others). However, such critical import usually does not exceed 10 -15% of the general volume of trade in food products, and 85-90% are products made in Belarus. Table 5 presents the dynamics of foreign trade in basic types of agricultural production in monies for 2005-2011.

Table 5. The dynamics of foreign trade balance in basic types of agricultural production in monies, million USD.

Index	Year					
	2005	2007	2008	2009	2010	2011
Export value of agricultural production	1464.1	1973.2	2386.4	2403.6	3379.4	4049.1
IMport value of agricultural production	1853.0	2342.9	3202.1	2391.6	2940.9	3300.9
Foreign trade balance (export minus import),±	-388.9	-369.7	-815.7	+12.0	+438.5	+748.2

As transpires from the analysis, by 2009 value of import production and agriculture in monies calculation for Belarus prevailed over the export value for ready products and food products made in Belarus. Therefore, in 2008, negative foreign trade balance of the Republic amounted to USD 815.7 million. In 2009 the negative trend was overcome, and positive balance was observed, which amounted in 2011 to USD 748.2 million.

Table 6 presents the geographical distribution of the export of agricultural and food raw products in 2010-2011.

Table 6. Geography of export of food raw products and food in the Republic of Belarus, 2010-2011

Specification	2010		2011	
	USD million	%	USD million	%
Export - total	3379.4	100	4049.1	100
including:				
CIS countries	3075.3	91.0	3681.5	90.9
Of which Russian Federation	2708.9	80.2	3272.0	80.8
Non-CIS countries	304.1	9.0	367.6	9.1
Of which EU countries:	215.2	6.4	259.7	6.4
Germany	43.1	1.3	50.0	1.2
POLAND	47.7	1.4	60.9	1.5

As transpired from the quoted data, the basic exporters of food products from Belarus are currently the CIS countries, of which the share amounts to 91% of general volume of export of agri-food products in value. It should be pointed out, that Russia is the leader in this regard, with export volume of ready to eat products from Belarus amounts to 80.8%. As for the EU Member States, their export of raw products and food products from the Republic of Belarus amounts in total to 6.4%, of which Germany and Poland 1.2 and 1.5% respectively.

It should be pointed out that dynamic and stable development of agriculture is significantly fostered by dynamic investment growth in the development of agri-industrial sector. General volume of investment in agricultural production grew from 2005 to 2011 by 5.8 times and amounted in 2011 to 11.7 trillion BYR. (Table 7).

Table 7. Dynamics of investments in fixed assets for the development of agriculture in 2005-2011

Index	Year					
	2005	2007	2008	2009	2010	2011
Investments in fixed assets for agriculture (in real prices) – total billion BYR	20049	3803.8	5547.5	7873.9	9490.7	11651.2
In % of general investment volume in fixed assets in all sectors of economy	3.0	14.6	14.9	18.2	17.1	11.8
Investment index in fixed assets (in compared prices), % year on year	187.5	99.5	128.5	129.8	108.7	84.2

Not only did such inflow of investment stabilise food supply in the Republic, but also helped shape a strong food potential to stabilise national agri-industrial sector in the conditions of the strengthening of international food demand.

Significant role in the strengthening of the material and technical base of agriculture was played by public budget investments and centralised investments, which grew in 2005-2011 from 2.4 trillion BYR to 8 trillion BYR (Table 8). In total, the sum of means to support agriculture is the equivalent of ca. 220 USD per hectare of arable land.

Table 8. Dynamics of budget financing of agriculture in 2005-2011, billion BYR

Source name	Year					
	2005	2007	2008	2009	2010	2011
Total	2415.6	4277.4	4677.7	5680.2	4978.6	8032
including:						
The republican budget	366.7	548.3	733.6	848.8	793.4	4315
National development fund	–	–	–	333.2	41.8	–
Local budgets	571.8	1599.1	1498.4	1879.9	1467.8	3716
Republican fund for support of agricultural producers, food producers and life sciences	1477.1	2130.0	2445.7	2618.3	2675.6	–
Subsidies per hectare of arable land, USD	125	220	247	232	191	195

It should be pointed out, that the level of state subsidies for agriculture is very high, compared to similar indexes of other CIS countries. At the same time, the average level of national preferences in the value of global production of agriculture amounts to ca. 20%. At the same time, if we compare an assess the support level for agri-industrial sector in the developed countries, than, for instance, the support for agriculture in Belarus is ca. 5 times lower than the average for the EU Member States. Such are the conditions in which the Republic of Belarus has to compete with the most developed countries in the world on global food markets. As transpires from the above facts, what matters for both Belarus and other CIS countries is not only the reduction of the achieved levels of centralised support for the agri-industrial Sector, but also their extension. What it requires is the optimisation of state support structures, change of basic support values for specific programmes and projects, as was the case in developed countries, in accordance to the "green basket" measures (according to the WTO classification). The basic characteristics of a stable and efficient agricultural development of Belarus is the dynamics of consumption of basic types of food per one citizen (table 9).

Table 9. Dynamics of consumption of basic food products in agricultural holdings in 2005-2011

Source name	Year					
	2005	2007	2008	2009	2010	2011
Consumption of basic food products in households per 1 person, kg						
Bread and pastries	125	124	113	101	99	97
potatoes	128	117	109	101	92	88
Vegetables and *bashtan*	97	101	99	98	94	92
Fruits and berries	36	38	42	45	47	41
Milk and dairy products	299	292	285	273	27	274
Meat and meat products	57	61	62	59	61	63
Fish and fish products	18	18	15	14	14	13
Eggs (units)	202	208	215	207	210	203
Vegetable oil, margarine and other fats	12	12	10	9	9	9
Sugars and sugar confectionery	28	29	28	25	26	26
Share of own production in consumption, %						
potatoes	96.6	95.9	96.2	95.0	93.3	92.7
Vegetables	80.7	81.9	81.4	81.1	80.6	77.7
Fruits and berries	57.2	43.9	49.9	59.9	58.1	49.6
Milk and dairy products	41.2	27.2	22	20.7	18.2	15.5
Meat and meat products	39.7	34.6	32.8	32.5	32.0	28.0
Eggs	71.9	67.4	67.9	64.5	63.7	62.8

As transpires from the analysis, in 2005-2011 a tendency for optimisation of consumption structures, improvement of quality of food and decrease of the share of domestic production in consumption were observed among the inhabitants of rural areas. At the same time, the daily general calorific value of food consumed amounts to ca. 2700-3100 kcal per individual [Social position... 2012], which equals 75-90% of the norm (3500 kcal).

Thus, the agri-industrial sector of the Republic of Belarus has a great potential and development perspectives. Achievements are substantial, but more should be done in the future. Therefore, the Institute of System Analyses in AGRI-INDUSTRIAL SECTOR NaN Belarus developed a development strategy for agri-industrial sectors to 2020, which is based on the increase of competitiveness of the entire food system, planning stable operation of all mutually related sub-systems. Agri-industrial production, products (consumption) markets, sales, distribution and food consumption, staff and financial security, material and technical security, technological security, information and scientific security.

It has been foreseen in the National Sustainable Development Programme for Rural Areas 2011-2015, and in the Republican development programmes for different sectors and spheres of agri-industrial sectors, related to the implementation of necessary ordinances of the President of the Republic of Belarus and the National Government.

Therefore, tasks for the sector in 2011-2015 are following:

- Achieve cereal production level of 12 million tons, sugar beet – 5.5 tons, milk 10.7 tons, sales of cattle and poultry (live weight) – 2 million tons;
- Provide the increase of production growth in all categories of farms and holdings amounting to 139-145%;
- Increase earnings and income from product sales (production, services and labour) by 2.2 and 9.2 times respectively;
- Achieve profitability level of agricultural sales of no less than 10-11%;
- Achieve labour productivity of no less than 85-90 BYR per employee in an annual perspective;
- Increase export supplies of agricultural production and food by 7.2 USD, and positive foreign trade balance – to 4 billion USD;
- Provide conditions for average monthly remuneration of employees hired in agricultural production equivalent to USD 750.

It should be pointed out that the national consumption system will develop in the context of global tendencies, conditioning the food deficit for the period by 2030. The FAO, taking into consideration that the population growth will be faster than the growth in food production (annual population growth of 1.4% compared to food production growth of 0.9%), and the decrease of the condi-

tions for restoration of resources, forecasts constant food deficit and resulting growth in production prices.

Taking into consideration the facts presented in the case and development tendencies for the global production growth, stable demand for food is forecasted. It provides an opportunity for the growth of national agricultural production, in the first place, through intensification factors. By 2020 there are plans to provide following agri-industrial production volumes and paces (table 10).

It transpires from the data quoted that total values of agri-industrial production can be increased by ca. 1.4-1.5 times in the following 4-5 years, in the perspective to 2020 – by 1.8-2.0 times. Calculations confirm that the Republic of Belarus may produce the average yearly amount of ca. 15 million tons cereals (all types), 10-12 million t milk, over 2 million tons meat, the same amount of potato and other production. At the same time, to provide such volumes, investments are necessary both o the part of agricultural organisations, and the State.

It should be pointed out, that the tendency for the development of global food system, and shaping and operation of food market will be naturally reflected in the development of the national food sector and internal market for food products. Solutions to problems related to the above should be based upon the need for unconditional execution of different obligations related to the presence in global (WTO) and regional (CIS, Eurasian Economic Community, Customs Union, Common Economic Space, Union Economy) structures, organisations and associations. Taking the above into consideration, basic conceptual approaches to foreign trade development of the agri-industrial sector of Belarus should be developed in the context of documents creating bases, regulating trade and economic relationships, mainly by means of Customs Union and CES, in particular: Agreement on creating of a common customs territory and a Customs Union of 6 October 2007, the Common Economic Zone concept, Agreement on the Operation of Customs Union under the multilateral trade system, signed on 19 May 2011, Agreement on Customs Code of the Customs Union, Agreement on Common Customs Tariff of the Customs Union (WTD UC), and a range of other related legal documents. Apart from the above, it is important to provide means to prevent and minimise possible negative impact of Belarus' accession to the WTO. Particular focus should concern the achievement of the goals relative to the State's accession to Common Customs Area.

Table 10. Production volume of food products in all categories of farms, thousand tons

Production	Average for 2001–2005	Average for 2006–2010	2011 (real)	Forecasts of the National Sustainable Development Programme for Rural Areas 2011-2015				Average for 2011–2015	Average for 2016-2020 (forecast)	2020 (forecast)
				2012	2013	2014	2015			
Cereals (weight after the development)	6006	7530	8375	10400	10900	11400	12000	10615	12734	13240
Flax fibre	41	44	46	60	60	60	60	57	63	65
Sugar beet	2180	3875	4485	4300	4500	4700	5500	4697	5800	6000
Rapeseed	101	371	379	921	963	1019	1060	868	1120	1160
potato	8385	8156	7721	7540	7600	7690	7750	7660	8232	8560
Vegetables	1793	2253	1979	2160	2160	2160	2160	2124	2286	2380
Fruits and berries	355	644	304	659	6777	686	714	608	758	789
Cattle and poultry (sales)	923	1248	1464	1555	1660	1755	1870	1661	2080	2240
Milk	5023	6245	6504	6880	7370	7940	8640	7467	988	12000
Eggs	2889	3369	3752	3771	3790	3809	3828	3790	4064	4227
Fish	5.4	12.4	15.2	18.9	20.	22.5	25.2	20.5	26.7	27.8

Provision of sustainable production of competitive agricultural products and food in amounts fulfilling the internal demand and providing growth of sales to foreign markets, by means of:

- Rational distribution of agricultural production;
- Optimisation of production structure, focusing on the demand on the internal market, with the long-term objective of increasing the volume and improvement of structural diversification of export of food and agricultural products;
- Increasing efficiency of use of productive resources (land, materials and technology, finance and labour);
- Implementation of innovative energy-efficient and resource-efficient production and sales technologies;
- Improvement of organisational and managerial structure of agri-industrial sector on the basis of the development of cooperative and integrative food industry organisations at the regional, national and international level;

2) supply of food to the citizens of the State in accordance with the consumption standards by means of:

- Own production of necessary amounts of food of adequate quality, accessible for mass consumption regardless of the price;
- Implementation of measures concerning the widening of the access of citizens to all qualities ad types of products;
- Creating the obligatory (market) mechanism for AGRI-INDUSTRIAL SECTOR regulation, oriented at balancing of food markets;
- Optimisation of the production volume for import of those products which are not produced in the country at all or in adequate amounts;

3) implementation of the newest achievements of national and international research, technological and technical development of the agri-industrial sector for a faster transformation of production to innovative, resource-saving technologies, primarily by means of:

- Accelerated transfer and simulation of the use of innovative solutions (types, technologies, machine systems etc.) In the sphere of production and sales;
- Development of local and alternative energy sources;

4) improvement of methods of motivation of employees and teams closely related to work results and agricultural business;

5) improvement of mechanisms regulating production and economic processes to make agri-industrial production profitable and self-financing.

Thus should tasks concerning the development of agri-industrial sector be performed, mostly on the basis of the accelerated development of innovation and investment, as well as cooperative and integrative processes, and final improvement of national regulations for the sector.

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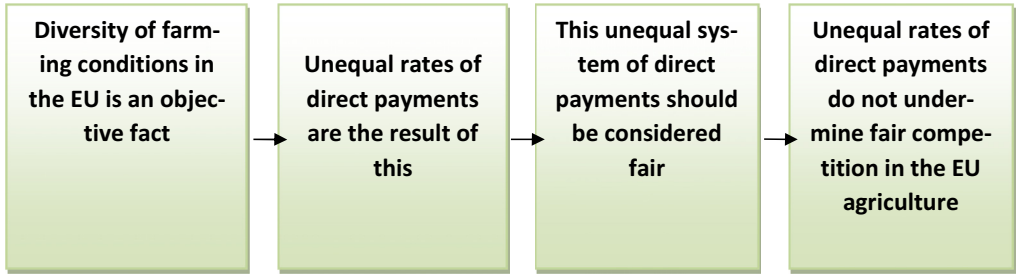
8. Would equal direct payments in the EU be fair?

8.1. Introduction

The problem of direct payment rates appeared in the public debate at EU level with the accession of the countries of Central and Eastern Europe in 2004. Poland and other countries of this part of Europe very strongly emphasized the lack of objective justification for maintaining significant differences in the above mentioned rates. European Commission in its proposal for the functioning of the system of direct payments for 2014-2020 has proposed to gradually reduce the scale of variation in the rates [European Commission 2011]. The implementation of this solution, however, does not eliminate the differences. Therefore, the question arises whether the payments should be equal, to be fair, that is objectively justified. This question is still open.

The purpose of this article is to identify on the theoretical basis and on the basis of statistics, that diversity of farming conditions justifies inequality in payment rates, which does not undermine the equality of conditions of competition in the single EU market. The reasoning for the adopted thesis is shown in Figure 1.

Figure 1. Reasoning presented in the article



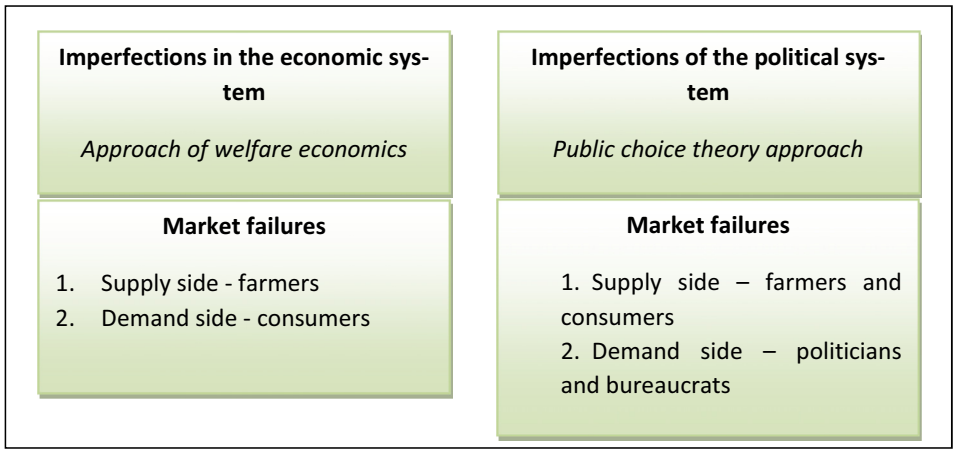
Source: Own elaboration.

The next part of the article briefly mentions the theoretical aspects to be taken into account when answering the question posed in the title, and then presents the results of a study on the relationship between the level of payment rates proposed by the Commission in the coming years and the size of labour inputs in agriculture in each Member State.

8.2. Theoretical determinants for evaluation of direct payments in the EU

Direct payments, as the whole agricultural policy, are an attempt of the state (in this case the EU) to address market failure. However, apart from the imperfections in the economic system we have also to deal with the unreliability of the state. An additional complication for the effective and efficient functioning of the agricultural policy is that failure, both of the market and the state, is revealed on the supply side and the demand side (Figure 2).

Figure 2. Market and State failure and agriculture



Source: P. Nedergaard (2005), Market failures and government failures: A theoretical model of the common agricultural policy. Paper for the EUSA Ninth Biennial International Conference March 31 – April 2, 2005 in Austin, Texas.

In the next programming period, the key justification for direct payments is to be the compensation for the farmers for providing public goods that are not valued by the market. The issues of valuation of public goods and their effective delivery are very complex problems. From the point of view of agricultural policy, the essential element is the effective delivery of public goods and the price the taxpayer are willing to pay for them. For this reason, one should consider whether the nature of public goods, delivery of which is to be compensated in

direct payments for 2014-2020, as well as the planned rates, meet the criteria of efficiency and are a price of equilibrium between supply and demand.

The so-called "greening" of the CAP provides for compensating farmers for providing public goods using different rates, but these differences are not based on the cost of the provision of these public goods, but they are related to the basic payment, which continues to be based on historical reference yields. Thus, it is difficult to talk about ensuring the effective provision of public goods with this instrument, if the price is not dependent on the cost of providing the goods.

One should also refer to the condition of balance in the provision of public goods (Figure 3). This condition refers in part to the first theorem of welfare economics. It has the following form:

$$MRS_{ra}^{A} + MRS_{ra}^{B} = MRT_{ra}$$

where:

MRS_{ra}^{A} - marginal rate of substitution of a private good (a) by the public good (r) for person A,

MRS_{ra}^{B} - marginal rate of substitution of a private good (a) by the public good (r) for person B,

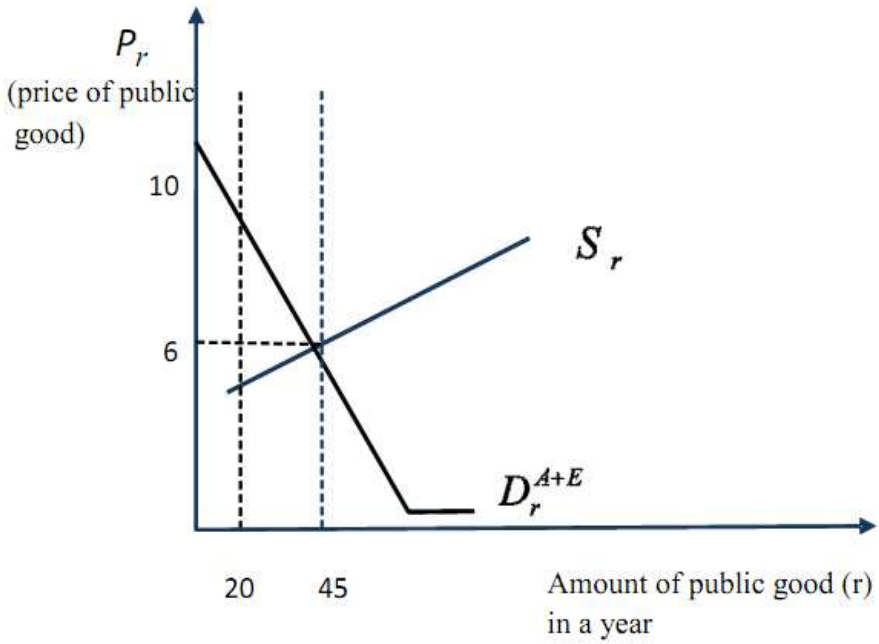
MRT_{ra}^{T} - marginal rate of transformation of the good *r* into the good *a* equal to the ration of marginal cost of the good *r* and the marginal cost of the good *a.* It is an absolute value of the slope of the production possibilities curve.

From the condition of balance follows that the attitude of individuals to public goods and the marginal rate of substitution of private good by the public good are essential. Assignment of different rates of payments for agricultural practices beneficial for the climate and the environment would suggest that citizens in different EU countries and regions assign different value to public goods provided by agriculture. Such an assumption, however, is not based on any research or analysis. However, on average, a much higher level of intensity of agricultural use of natural resources in the EU-15, as compared with the EU-12, and thus a greater need for increased attention to the environment in the "old part" of the EU, could be the reason for diversifying rates of this part of the payments.

Although the Treaty on the Functioning of the European Union lists the objectives of the CAP, in theoretical and practical terms, one considers a wider range of reasons for the continued functioning of direct payments. We can mention here the issues such as territorial cohesion or the Community food security. An important subject of discussion, at least theoretically, should be the impact of

support on the competitiveness of agriculture and the competitiveness of its individual components, i.e. determination whether and to what extent support differentiates the conditions of farming, not only by Member States, but for other categories of farms, in particular by the type of agricultural activity.

Figure 3. Effective delivery of public good



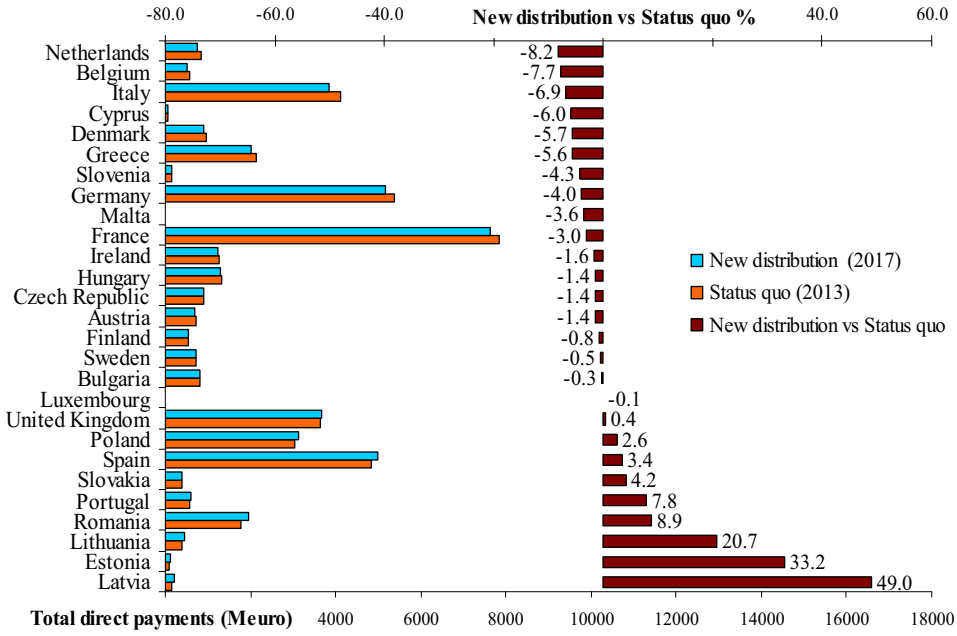
Markings: D_r^{A+B} – aggregate demand, marginal benefit, S_r – supply, marginal benefit equal to marginal cost.
Source: Adaptation of considerations in [Rosen et al. 2010: 61].

From the point of view of taxpayers, the key aspect of assessing the level of payment rates should be to determine to what extent the amount and division between different groups of farms is optimal in the sense of Pareto and allows optimal allocation of EU funds. This means a shift in the debate on the fairness of support rates from the level of sector to the level of the whole economy of the Community and requires determination of the impact of payments on the overall level of well-being in the EU.

8.3. What criteria are used to evaluate the distribution of funds between the countries of the EU?

In the draft Regulation of the European Parliament establishing rules for direct support schemes for farmers for 2014-2020 the Commission has proposed the distribution of funds under the first pillar of the CAP among the Member States [European Commission 2011]. The basis for determining the amounts of the new national envelopes for direct payments were the amounts allocated to individual Member States in 2013 (including modulation). However, a mechanism of reallocation of resources was introduced in relation to the planned support in 2013, intended to partially compensate for the differences between the countries with the highest and lowest amounts of direct payments per hectare of reference area [Henkeet et al. 2012]. The new solutions in the system for redistribution of subsidies would benefit some of the so-called new Member States and Portugal and Spain (Figure 4).

Figure 4. Proposed change in the allocation of funds between Member States in the first pillar of the CAP



Source: own study based on [Henkeet al. 2012].

The Commission's proposal, despite some adjustments, preserved in fact the historically shaped allocation of funds, which has been developed in previ-

ous years as a result of negotiations and political compromises. The scale of equalization of direct payments in the assessment of all the countries for which an increase of the national envelope was foreseen under the first pillar of the CAP (with the exception of the UK), has proved to be insufficient [Czyżewski and Stępień 2012]. Especially in Poland it sparked a lot of emotions and was criticized as deeply unfair to domestic agricultural producers. The main argument of the thesis on maintaining the undue preference for farmers mainly from the fifteen countries (the so-called old EU countries) concerned too large differences in the rates of payment per hectare of reference area. In this situation, the question arises whether the earth is the only and objective criterion of allocation of funding in the form of direct payments? Is it possible to specify different allocation rules, which may be considered to be more fair?

In an attempt to answer this question, one must first recall the development of the CAP objectives. Initially they were presented as: increasing agricultural productivity, ensuring food security in Europe, stabilizing agricultural markets, providing revenue for agricultural producers and at the same time cheap food to consumers [Muirhead and Almas 2012, Tomczak, 2009]. Currently formulated expectations for the CAP 2014-2020 in relation to the first pillar, and therefore in relation to direct payments, are also changing. It is emphasized, however, that direct payments must continue to be the basis for stabilizing farmers' incomes, but they are also to provide payment for the provision of public goods and compensate for the higher standards of food production in the EU [European Commission 2010]. Making direct payments dependent on the fulfilment of several conditions, at least at a minimum level, is nothing new and this principle was in force also in other periods of the CAP. In principle, the requirements and criteria for the granting of direct payments in the new programming period are to be extended, but also the same for the given type of farm in all Member States.

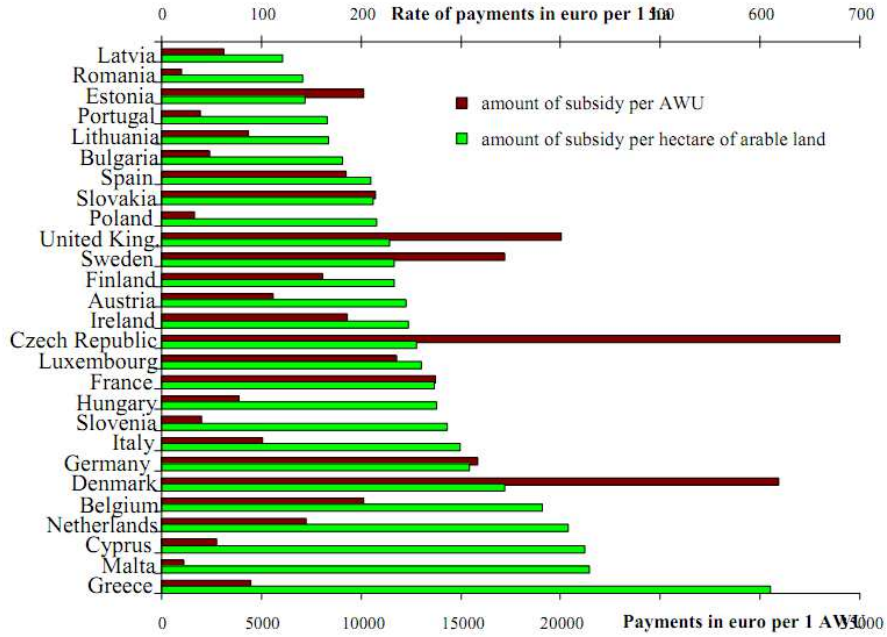
The same answer to the question of how to measure the level of "objectivity" of the proposed allocation of funds under the mechanism of direct payments must be sought in the formulated objectives of the CAP. If we expect meeting of the same criteria, we should provide agricultural producers with conditions for obtaining a similar level of income. "Similar" does not mean equal, because excessive preference of farmers in relation to other social groups in the given country would give rise to controversy and a sense of social injustice.

The problem with examining the proposed budget allocation is a huge diversity of agriculture between EU countries, not only in terms of natural, production and economic conditions, but also in basic factors of production and applied production technology. In addition to arable land - a component of the nat-

ural capital whose specific role is undisputed - another factor of production that is not subject to a formal valuation and payment is own labour. The relationship of these two factors in each country is also very diverse.

Distribution of the benefits resulting from the allocation of funds in the form of direct subsidies is therefore different, depending on whether the point of reference is the agricultural area or the labour, and especially own unpaid labour[18] (Figure 5).

Figure 5. Proposed amounts of direct payments in 2017 in relation to agricultural area and own labour of 2010



Source: Own study based on http://epp.eurostat.ec.europa.eu/portal/page/portal/agriculture/data.

[18] In the case of employees salary depends on the situation on the labour market and in a small extent on the economic condition of farms, and even more on direct payments. This fact is confirmed by the survey conducted by Petrick and Zier in German agriculture; they claimed that the level of employment, and indirectly the remuneration of employees, is independent of the amount of direct subsidies enjoyed by farms (it is flexible in terms of the labour market situation, rather than the level of agricultural subsidies). Only in the case of an investment subsidy, and that in the event of ongoing projects which do not substitute labour with capital, the public support will increase employment [Petrick and Zier 2012].

Using average labour inputs as a criterion of "fairness"[19] of funding allocation in national direct payments, the best situation would apply to countries such as: Czech Republic, Denmark, Great Britain, Sweden, Germany and France. In the case of: Romania, Poland, Malta, Slovenia, Portugal and Bulgaria, their national envelopes would be undervalued. It should be noted that on the one hand we have a group of countries for which the proposed subsidies per agricultural area result in a high rate of direct support, but at the same time low in terms of their own labour inputs (Malta, Cyprus, Greece). On the other hand, the group of countries for which national envelopes are low irrespective of the evaluation method includes: Romania, Portugal, Latvia. However, both criteria are not devoid of subjectivity.

Agricultural activity is carried out under different conditions as regards the purchased production factors (unit costs), as well as sold agricultural raw materials and other elements of the environment. Establishing an objective criterion to assess the planned distribution of direct payments to individual countries should take into account the above aspects. In analyzing this issue, it should be remembered that, unlike in the case of own land, the work of the farmer and his family members must generate economic surplus allowing for an adequate level of consumption of the household. According to the CAP objective, the farm must therefore ensure the financial surplus-income, as remuneration for own labour, allowing for existence at socially acceptable level. The economic category that takes into account these aspects is the operating surplus, i.e. the added economic value less the cost of depreciation of assets, payment for labour, accrued taxes directly related to agricultural activity (Table 1).

Optimization of criteria for the evaluation of the planned distribution of direct payments among EU countries, in our view, requires taking account of the individual economic situation of agriculture in each country. It also requires simulations taking into account the new amounts of direct payments. In order to carry out further analysis, the operating surplus generated in each of the States at the country level in different periods have been adjusted to take account of expected subsidies in 2017, i.e. the year of the process of the final establishment of the level of payments for the next three years.

[19] Linking payments with the size of employment in agriculture, rather than the factor of land has already been discussed in scientific papers [Gömann 2002, Happe and Balmann 2002, Herok and Lotze 1997, Mack and Mann, 2007]. The authors of this study, however, call for the adoption of own labour inputs as a component of the method to objectively determine the distribution of funds among the EU Member States, and not as a mechanism for allocation of payments among farms in the given country.

Table 1. Establishing parity – relation of the direct surplus for own labour (AWU) to earnings in the national economy

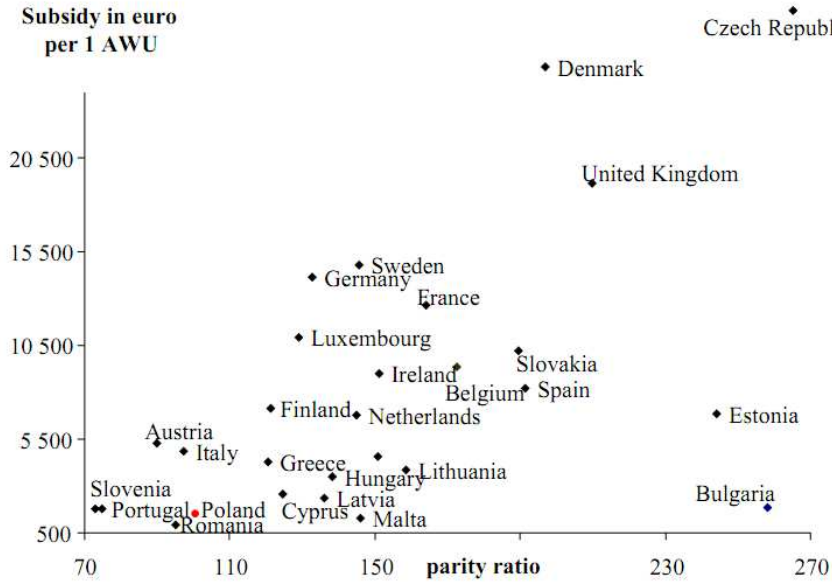
Country	Operating surplus Factor income		Estimated operating surplus[b)]	Annual net earnings w 2010 r.	Parity ratio [c)]
	2010	Average for 2004-2010			
Belgium	2 604.2	2 213.3	2736.5	25589.5	172.8
Bulgaria	1 649.4	1 602.8	2413.6	2275.6	258.1
Czech Republic	1 452.1	1 306.9	2196.3	7613.7	265.1
Denmark	2 065.2	1 780.9	2689.2	25249.0	196.9
Germany	12 335.2	12 838.0	17988.4	25296.9	132.7
Estonia	314.1	264.5	399.0	6438.0	244.0
Ireland	2 284.9	2 624.3	3859.1	17527.1	151.1
Greece	6 526.9	6 968.4	8978.9	13098.6	120.5
Spain	22 955.2	23 514.0	28484.4	16098.4	191.5
France	23 668.6	21 868.4	29472.7	21165.9	164.1
Italy	14 975.8	17 514.0	21344.8	18639.1	97.3
Cyprus	326.8	325.4	375.4	11871.9	124.5
Latvia	395.1	378.1	595.9	5095.7	136.1
Lithuania	613.2	551.7	1009.6	4439.1	158.6
Luxembourg	62.3	93.6	127.7	27496.7	129.0
Hungary	2 352.2	2 244.6	3537.7	5858.4	138.3
Malta	75.4	64.3	69.1	9651.9	146.1
Netherlands	5 826.3	5 588.7	6346.2	24649.9	144.9
Austria	2 436.2	2 470.1	3173.9	24859.7	90.0
Poland	**9 024.2**	**7 278.2**	**10392.7**	**5189.3**	**100.5**
Portugal	2 376.2	2 473.7	3082.7	10736.5	75.0
Romania	4 918.9	5 409.5	7344.6	3567.2	95.1
Slovenia	413.4	418.5	556.3	9819.0	72.8
Slovakia	524.6	519.8	921.6	5883.9	189.6
Finland	2 173.1	1 899.5	2433.0	24449.2	121.2
Sweden	1 502.0	1 486.1	2199.0	25368.7	145.7
United Kingdom	9 794.7	9 161.1	12818.1	21696.3	209.7
Total EU	133 646.1	132 858.3	175548.4	14800.9	107.8

[b)] average of the operating surpluses generated by agriculture of the country in 2004-2010 was reduced by direct subsidies from the budget (national and EU), and then increased by the proposed subsidies in 2017.

[c)] Parity ratio was obtained by dividing the estimated operating surplus per unpaid labour inputs in the country (AWU average of 2004-2010) and the average net earning in the economy of the country.

Source: Own study based on http://epp.eurostat.ec.europa.eu/portal/page/portal.

Figure 6. Projected direct payments in 2017 per unit of unpaid labour (thousands of EUR per AWU) in relation to parity



Source: Own study.

Expressing the operating surplus in thousands of EUR per unit of own labour in agriculture in relation to wages in other sectors of the national economy, we obtained a picture of the impact of the level of direct payments in relation not only to the absolute economic situation of farmers, but also the economic situation of the country (Figure 3).

On this basis, we can ascertain in which Member States, despite the low level of direct payments, the income situation of farmers as compared to other social groups will be favourable (Bulgaria, Estonia). Poland, along with Romania, Portugal and Slovenia is in the group of countries with a very low level of subsidies per unit of own labour, which is not enough, in relation to earnings in non-agricultural sectors, to ensure the remuneration of this factor of production (parity relationship) at the level of the average in the EU. In Austria and Italy, subsidies per unit of labor would be higher than the EU average, but in relation to wages in the national economy they would not provide the average level of parity payment in the overall studied population. At the other extreme would be the Czech Republic, Denmark and Britain, which – having a high level of subsi-

dies in relation to the own labour - would also have a high payment of this factor of production relative to non-agricultural sectors. These relationships reflect the simple fact that excessive employment in Polish agriculture is the main cause of low income of our farmers. This would not change significantly even if direct payment rates per 1 ha of arable land are equalized across the EU.

8.4. Summary

The problem of whether equal level of payments throughout the Community would be fair is a very complex issue. It covers a number of aspects of the assessment of natural and economic conditions of agriculture, not only in individual countries but also in smaller geographical and administrative units. Moreover, it is a matter that goes beyond the issue of functioning of the instrument and all of the Common Agricultural Policy. Especially in times of economic crisis and the crisis in public finances that affect virtually all countries of the Community, the question of the objectives and effectiveness of their implementation through direct payments is asked more loudly. No clear indication of the objectives of the payments and lack of evidence showing the positive impact of this form of support for agricultural competitiveness and Community-wide prosperity that takes into account not only the economic, but also the environment, leads to more questions about the validity of keeping this instrument of support when it is necessary both to consolidate public finances and support economic growth in order to rebuild and restore internal balance in the Euro area and to improve international competitiveness.

Today's crisis is a good time to review the existing solutions in the field of agricultural policy and to introduce instruments and mechanisms that would provide both greater efficiency and effectiveness, while pursuing the objectives that meet the current and future challenges, rather than problems faced by countries of the Community when it was created. This also applies to the Common Agricultural Policy.

Fairness, understood as equality, is essential for the development of both EU agriculture and the whole economy of the Community. It requires a redesign of truly equal and fair competition in the single EU market, as well as the rules for granting support. This alignment of principles requires greater integration in various aspects of functioning of agriculture and the economy and public administration. It is, however, necessary to properly set the priorities, so that the integration was not an objective in itself and not serve the growth of EU bureaucracy, but to assure such institutional conditions that would create an enabling

environment for sustainable socio-economic development throughout the Community in all aspects and areas.

The presented criterion for allocation of direct payments among the Member States, based on the amount of operating surplus obtained per unit of the farmers' own labour and its relation to wages in the national economy in each country, refers to the effectiveness of the implementation of the basic objective of the CAP: to provide farmers with incomes comparable to non-agricultural income. From this point of view, it can be the criterion that brings us closer to the objective assessment of the allocation of direct payments among the Member States. However, it is not without flaws. In this assessment mechanism, the countries with structural difficulties due to an excessive fragmentation of agriculture and inefficient use of own labour are perceived as potential beneficiaries of higher public aid. In our opinion, considering objectivity only in relation to the category of direct payments is too narrow and inadequate approach. It is necessary to separate the concept of "objectivity" and efficiency and effectiveness of the instrument in shaping the competitiveness of domestic and EU agriculture.

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9. Impact of the CAP support measures on the agricultural sector in Lithuania

The paper examines an overview of the common agricultural policy, its main goals and developmental stages. The paper provides wide range of information concerning CAP support measures' impact on agricultural sector in Lithuania. The development trends of the future CAP and Lithuanian interior priorities in agricultural sector are also presented in the paper.

9.1. Evolution of the CAP

Common agricultural policy (CAP) formation was determined by the peculiarity of agricultural activity and society's dependence on agricultural products (Koning, 2006).

After the Second World War, Europe had faced with a food shortage. At that time agriculture still was the main "employer", so there was a need of such agricultural policies that would promote to produce the necessary amount of food. Thus, the real discussion about agricultural policy integration at European level had appeared and in fifties of the twenty century the CAP was launched (Jambor, Harvey, 2010, Zobbe, 2002). The CAP objectives were set out in the Treaty of Rome [Consolidated.. 1957]:

- to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour;
- thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
- to stabilise markets;
- to assure the availability of supplies;
- to ensure that supplies reach consumers at reasonable prices.

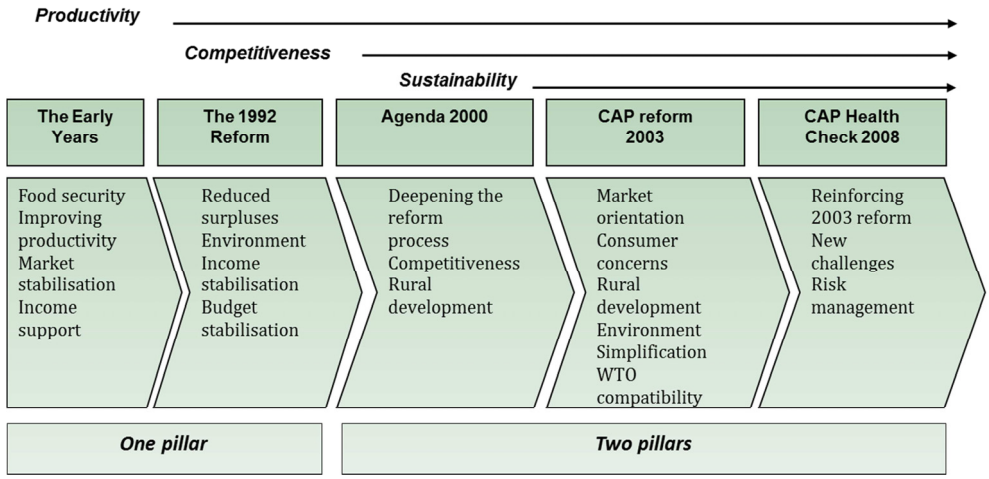
There were two circumstances that facilitated the origin of the CAP [Koning 2006]: first, the countries that joined the European Community had already a

protectionist agricultural policy before and, second, these countries signed the General Agreement on Tariffs and Trade, by which the supply was regulated and the protection of the agricultural sector was ensured. The separate measures used by Member States (MS) were aligned and brought together into a single policy. The CAP has been based on principles of:

- a single market;
- community preference;
- equality and efficiency:
  - the convergence of income between farmers and other,
  - the output price reduction by increased productivity;
- common financing: CAP expenditure should be covered by the general budget, collected from import duties and other taxes.

Thus the CAP was one of the economy growth factor in the member states. Throughout its history, starting from the 1960s, the CAP has changed and evolved (Figure 1).

Figure 1. Historical development of the CAP



Source: compiled by the author based on European Commission Agriculture and Rural Development [2009, 2012].

In the early years CAP had been solving the basic food security problem. However, the support measures for problem solving resulted an overproduction, increased pollution and other problems. Thus the significant changes in policy were needed [European… 2012a, Jurkėnaitė, 2011].

Under the MacSharry reform in 1992, there was a significant shift from market support to direct payments to farmers and some environmental measures

were introduced [Department… 2012]. On the one hand the need to reform the CAP was partly influenced by the U.S., but the real reason was the situation in the whole European Union (EU) and caused by national positions of member states. The overproduction problem was the sign that the CAP budget allocation was so attractive to farmers that they didn't react to the market signals. Another problem that had led to new policy measures was public concerns about the environment, food quality, animal welfare [Moehler 2008].

After the reform in 1992 the situation in agriculture was improved, but the European Commission (EC) was concerned that the situation can be imbalanced because of probable overproduction caused by export restrictions. Moreover, stable situation in the agricultural sector could be complicated by the EU enlargement perspective, because the agricultural budget had clear boundaries and the main problem was the budget allocation.

The second reform - Agenda 2000 Agreement was based on the European model of agriculture and marked a further significant shift from market supports to direct payments. It also intensified the emphasis on food safety and the environment. Additionally, the budget for agriculture was fixed for the years 2000 to 2006 [Department… 2012]. In 2002, the European Council decided on the limits to be applied to agricultural expenditure for the EU of fifteen plus the ten Acceding Countries in the period 2007 to 2013. Agenda 2000 Agreement also divided the CAP into two pillars. The first pillar included direct payments and mechanisms regulating the market. Meanwhile a new rural development policy was introduced as a second pillar of the CAP. This new policy encouraged many rural initiatives while also helped farmers to diversify, to improve their product marketing and to otherwise restructure their businesses [Юркенайте 2012].

The reform 2003 resulted decoupling of income support payments – the direct payments were no longer linked to production. The new elements of CAP such as the cross-compliance (with a range of food safety, environmental and animal welfare measures) and the modulation were also introduced. Moreover, funding for rural development continued to increase [Мельникене *et al* 2011].

Other CAP stages of the development were mainly due to the EU's internal problems and changing societal needs and values. It was intended to boost the farmers' competitiveness that was insulted by strict production quality, environmental and farming requirements causing increase of local production and service costs.

On 20 November 2007 the Commission adopted the Communication "Preparing the Health Check of the CAP reform". The idea behind the Health Check is not to re-invent or re-reform the CAP, but to assess if it is working as well as it could in a larger European Union and in a shifting international con-

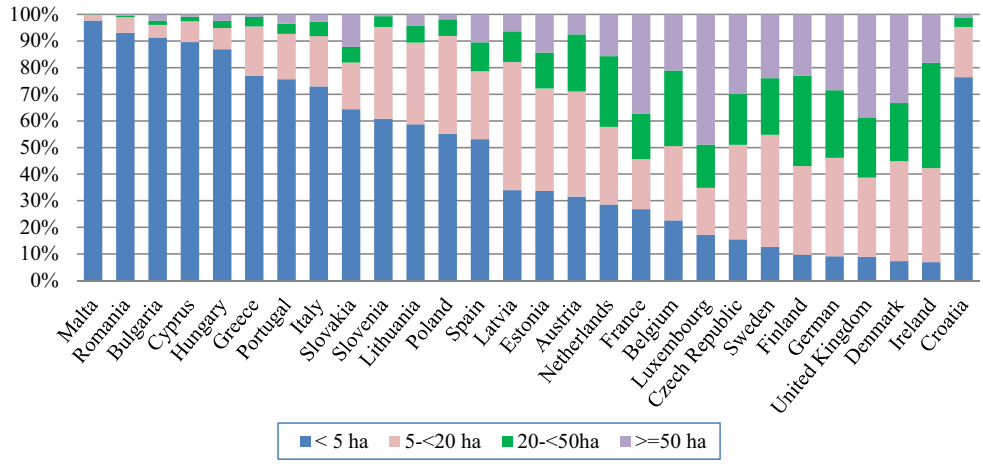
text. The Health Check is therefore not a major reform but an effort to streamline, simplify and modernise the CAP and to remove remaining restrictions on farmers to help them respond to growing demand for food. The Health Check is to further break the link between direct payments and production and thus allow farmers to follow market signals to the greatest possible extent [European 2012b].

Today's CAP structure is still the same as it was in 2000. The only significant difference is decoupled direct payments from agricultural production volumes. The CAP with such structure was the first agricultural policy of its kind for ten European countries in 2004 and for two additional countries in 2007. Lithuania was one of mentioned ten countries, which farmers have been experiencing CAP for more than 8 years.

9.2. The CAP impact on the Lithuanian agriculture

Accession to the EU in 2004 has had a strong impact on Lithuanian agricultural sector. Farm structure has been changing rapidly in Lithuania whilst preparation for the accession and post-accession period. According to the Eurostat data 2010, the vast majority of farms in EU are small farms with holdings less than 5 ha; they account about 69.2 % by average (Figure 2.).

Figure 2. Farm structure across EU according to the number of holdings, 2010



Source: compiled by the author based on Eurostat data [2012].

EU medium-sized farms (between 5 and 100 ha) account 28.1 % of all EU farms in 2010 and large farms (bigger than 100 ha) account about 2.7 % by av-

erage. In comparison to 2005 data, amount of large farms in EU increased about 31 %, amount of medium-sized farms increased a little bit less than 6 %, amount of small farms decreased more than by 3.1 %.

The structure of farms in Lithuania transformed towards strong polarization: the number of medium-sized farms and utilized agricultural area (UAA) of them decreased rapidly, while number of large farms and the area of these farms increased. In comparison to 2005 data farm structure in Lithuania in 2010 was as follow:

- the number of small farms with holdings less than 5 ha increased from 51.4 % to 58.7 % of all Lithuanian farms, UAA of these farms decreased from 13.1 % to 11.4 % of total UAA;
- the number of medium-sized farms (between 5 and 100 ha) decreased from 47.7 % to 39.4 %, UAA of these farms decreased from 58.5 % to 47.1 %;
- the number of large farms with holdings larger than 100 ha increased from 1 % to 1.9 %. Their UAA increased from 28.4 % to 41.6 %.

CAP support measures had enhanced the most influence to such polarization of farm structure in Lithuania.

The increase of smallest farms number can be explained by two reasons:

1) the decision of farmers, who got benefits from an *Early retirement from the agricultural activity* measure, to remain in the permitted size of private land for agricultural purposes;

2) the decision of people from urban areas to purchase a piece of land for residential house building in a rural location and register it as an agricultural holding, in order to take advantage of farmers' benefits.

Applicable model of EU direct payments, which provides that the amount of aid depends on the amount of declared hectares of UAA, enlarged number of large farms and affected rapid growth of these farms' overall UAA.

The economies of scale of large farms have been strengthened by 2007-2013 direct payment's model. A large amount of received direct payments has allowed large farmers accumulate financial resources that are needed to obtain support for efficient agricultural equipment. Absorption by large farmers of the major part of the subsidies influenced the decreasing ability of the medium-sized farms to compete in agricultural development process.

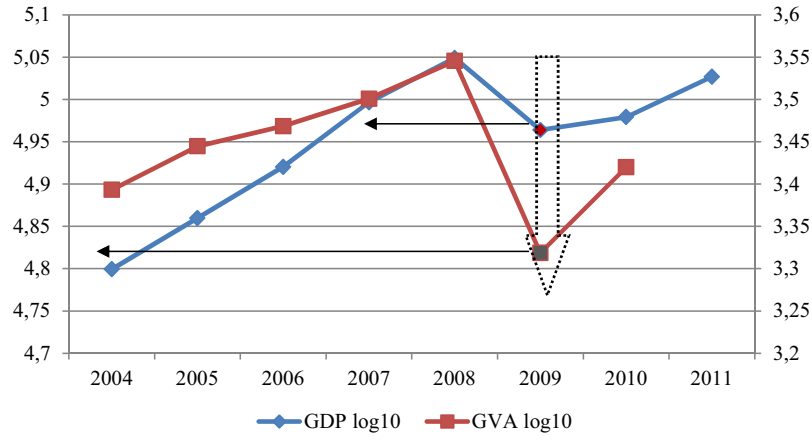
Lithuanian farm structure is in a shaping process and it is quite different from farm structure in other countries of Baltic Sea region. Although there is a tendency of becoming large-scale farms in all countries of the region, the number of medium-sized farms remains to be relatively stable, even in neighboring

Latvia, where the farm concentration is also strong. In addition, medium-sized farms are viable and productive in such old MS as Germany, Denmark, Sweden, Finland, etc. Such farms perform well in Poland also, where number of small and medium-sized farms is dominative by farm structure as well as by overall UAA of these farms.

According to 2010 Farm Accountancy Data Network (FADN) data in Lithuania, large farms' (with more than 150 ha of UAA) gross profit with subsidies per 1 annual work unit (AWU) in Lithuania differed 12 times in comparison with farms up to 10 ha (EUR 25.2 thousand and EUR 2.1 thousand respectively). Farms with less than 40 ha of UAA gained gross profit with subsidies per 1 AWU (EUR 3.7 thousand) was less than the annual average salary of those employed. In accordance with weak opportunities of modernization and increasing of the value added of the farms with less than 40 ha of UAA, the number of those farms in Lithuania will continue to decrease in the future.

In accordance to higher revenues, amounts of direct payments and subsidies from rural development measures, large farms in Lithuania can outrival in expansion of agricultural land by offering a higher price or borrowing it at a higher price. According to FADN data in Lithuania, farms with more than 150 ha of UAA, invested EUR 41.8 thousand for agricultural land purchases in 2005-2010 period (approximately EUR 7 thousand per year) while farms between 30 and 40 ha of UAA invested EUR 1.6 thousand (~ EUR 260 per year) and farms between 40 and 50 ha of UAA – EUR 3.1 thousand (~ EUR 520 per year).

Figure 3. Logarithmic data of GDP and GVA in agriculture in Lithuania, 2004-2011



Source: compiled by the author based on Statistics Lithuania, 2012

Subsidies granted to the farmers, the major part thereof consisted of direct payments, have contributed to the growth of value added in agriculture. In accordance to the Lithuanian statistical data, value added in agriculture retained the tendency of increase throughout the period of 2004–2008. Value added (excluding subsidies), created in agriculture, in the crisis year 2009 reached the level of 2002–2003; meanwhile the Lithuanian GDP fell down to the level of 2006. However, due to subsidies, value added in agriculture reached the years 2006–2007 (Figure 3).

Application of direct payments in Lithuania intensified the farmers' dependence on the support and partly predetermined a weak response to the market signals. It is very important that in the period of 2014–2020 the direct payments would perform the social function as less as possible and the viability of real agricultural activities as a business unit would be maintained.

Following the implementation of support measures for rural development (SAPARD, 2004–2006 SPD Priority 4, 2007–2013 RDP) the Lithuanian agricultural policy was focused on the modernisation of agriculture and the increase of intensity. More than 11 thousand farmers participated in projects implemented under the modernisation of farm holdings, of which nearly 90 % were implemented in the period of 2007–2011. On average EUR 48.7 thousand was allocated per project. 2.8 thousand farmers were supported implementing projects under the setting-up of young farmers, the average support amounted to EUR 34.8 thousand. The investment support for farmers to modernise farms and financial instruments to facilitate farmers borrowing conditions increased farms' provision with capital, especially with modern agricultural machinery. In 2010, as compared to 2005, assets of farmers' farms per 1 ha of UAA increased by 89.7 %, and assets per 1 AWU – by 38.3 %. The most attention was focused on agricultural equipment upgrade or replacement. According to the FADN data, it can be said that in the respondent farm investment structure, the investments into agricultural machinery accounted for 63 % in 2010.

When comparing the results of Lithuania and other countries, it can be concluded that the high production intensity reach the developed animal husbandry countries. The numbers of livestock in Lithuania have been falling gradually over the period of independence, but have significantly dropped after the introduction of direct payment scheme, which was designed to decouple support from production. Decreasing the number of livestock, abandoned and unused for production agricultural areas have emerge, under various evaluation criteria ranging from 500 to 800 thousand hectares.

Table 1. Net income with subsidies per 1 AWU in farmer‘s farms of different farming type, in comparison with the national average, in 2004–2010, %

Type of farming	2004	2005	2006	2007	2008	2009	2010
Specialist cereals, oilseeds	169	172	167	205	200	170	211
General field cropping	173	130	107	115	143	135	NA
Horticulture and permanent crops	100	72	77	94	82	82	93
Specialist dairying	103	126	121	86	79	90	91
Mixed cropping	57	49	68	67	52	61	NA
Mixed livestock, mainly grazing livestock	73	57	85	60	48	75	47
Field crops-grazing livestock, combined	85	116	101	80	99	87	85
Field crops and granivores, combined	102	68	34	69	67	70	NA
Average	**100**	**100**	**100**	**100**	**100**	**100**	**100**

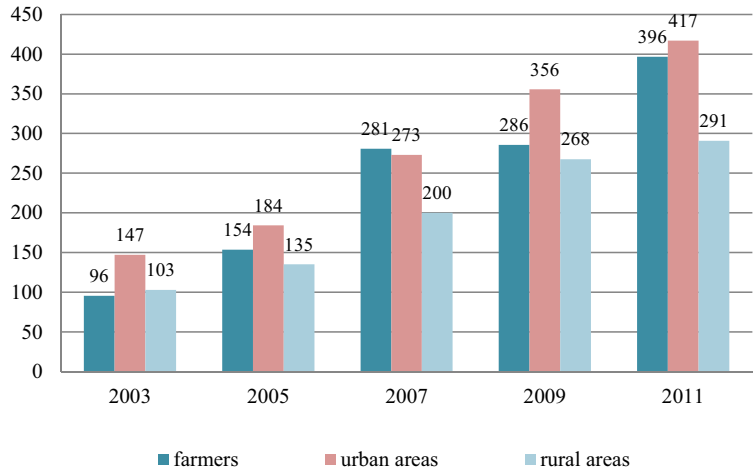
Source: FADN data.

The declining livestock numbers show a decreasing farmers' interest in the development of animal husbandry. The mixed farms with livestock create significantly less income per 1 AWU than the crop farms. According to the FADN data, in 2009 net income with subsidies per 1 AWU in the mixed farms with mainly grazing livestock was by 25 % lower than the national average and 2.3 times lower than in the most profitable farms growing cereals and oilseeds, while in 2010 – by 51 % and 2.5 times, respectively (starting 2010 has changed the classification by types of farming, so some data cannot be compared with the corresponding figures of the previous year). Similar tendencies prevailed over the entire period of 2004–2009 (Table 1). Direct payments and investment support encourage farmers to develop crop production. For example, according to the FADN data, in 2009 the total contribution (direct and compensatory payments and investment support) per 1 AWU to the mixed farms with mainly grazing livestock was less by 8 %, in comparison with the national average, and 2.4 times lower, as compared with the farms of cereals and oilseeds; in 2010 – by 4 % and 2.5 times, respectively.

Although the income per 1 ha UAA in the crop farms is lower than in the farms of mixed production, the costs, especially labour costs, are also lower.
Animal husbandry is considered as a priority branch of production, but the declining numbers of livestock indicate that the support measures and priorities, provided for this branch, is inadequate to the support that gain crop farms competing for economies of scale, when direct payments are decoupled from production. Therefore, it is important to adjust the current policy according to new threats and opportunities emerging for the agricultural sector and re-evaluate its potential, the economic and social importance.

The period after 2004 also has been distinguished by an especially rapid decline in the number of the employed in agriculture, as farmers, taking advantages of the SPD for 2004–2006 and RDP for 2007–2013 measures and receiving direct payments, invested heavily in efficient agricultural machinery, thus reducing the need for labour. In 2010, as compared with 2004, the share of the employed in agriculture and related services in the overall employment structure decreased from 15.2 to 8.2 %. Investments caused an increase in labour productivity and farmers' income. However, in recent years, the growth of labour productivity has slowed.

Figure 4. Average disposable income per household per month by place of residence, EUR



Source: compiled by the author based on Statistics Lithuania, 2012

State policy is aimed at supporting employment in the countryside and reducing property differentiation as the farming is the equivalent of small and medium-sized business in other spheres, and the bigger the middle class segment in the countryside, the smaller the risk of social conflicts in the society. This fact is of special importance when speaking about the abrupt unification of direct payments at the EU level (which is of special popularity and grounded in the new MS). The European Union countries vary in terms of the standard of living, therefore after immediate convergence of direct payments across EU, a threat may arise in the new MS that the farmers' income will exceed considerably the income of other rural residents, thus increasing risk of social exclusion (Figure 4).

It is predicted that in 2013 at the existence of the present support level the average of disposable income of farmers and urban population would be up to

50% higher than of the other rural residents. Therefore it is most probable that abrupt unification of direct payments at the EU level would increase the social exclusion in Lithuania.

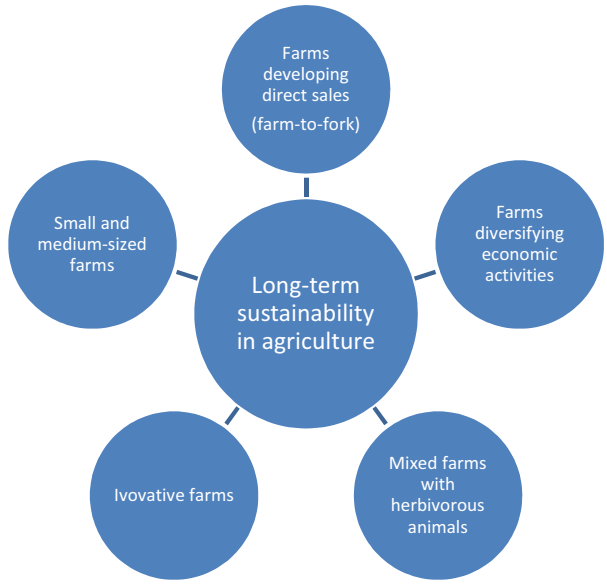
9.3. Results of CAP impact on agriculture in Lithuania and Lithuanian interior priorities for agricultural sector post 2013

Analyzing the impact of CAP on the Lithuanian agricultural sector, it is possible to insight several important elements of the Lithuanian CAP impact:

- Plant-growing has become economically more attractive than animal husbandry in Lithuania as a result of decoupling of direct payments from production.
- Due to emigration, the number of youth and employable population is decreasing in rural areas, therefore agriculture may experience workforce shortage, thus making workforce more expensive.
- Higher environmental requirements may have a negative impact on the farmers' activities, even though the application of advanced technologies and innovations in agriculture afford the opportunities for efficient farming and solutions of environmental problems.
- Small and medium-sized farms do not possess sufficient opportunities for investment in farm modernization and implementation of new technologies.
- Small and medium-sized farms are not able to compete with large farms as concerns land purchase; therefore small and medium-sized farms have no opportunities for expansion. Large farms, however, have reached the high-intensity production and are generating income enabling further modernization of production, have opportunities for export of their production, this being an alternative for its selling to the food industry.

All these elements are reflected in the tasks outlined in the 2014-2020 strategy of Lithuania (Figure 5).

Figure 5. Priority entities for agricultural support in Lithuania



Source: [LIAE 2012].

According to the Figure 5 the main tasks in agriculture for 2014 -2020 period in Lithuania is to increase the viability of small and medium-sized farms; to increase the value added created in the farms by implementing innovations and stimulating knowledge transfer; to develop animal husbandry by using more rationally the natural and human resources in the country; to create and preserve jobs in farmers' farms by diversifying the activity; to encourage direct sales in agricultural and food products and their integration into the food supply chain.

In order to harmonize national interests in the new period and the objectives of the CAP after 2013, it is important to pay attention on the common policy development trends, which are identified for the new period. Moreover, to evaluate the complexity of the achievement of the national objectives through the common policy with common rules and limited financing that distribution needs more fairness across EU.

9.4. Development trends of the future CAP

The main 2014-2020 CAP objective is still to provide sustainable agriculture throughout the EU. For this purpose, according to the content analysis, key challenges of the CAP for the 2014-2020 period were identified (Jurkėnaitė,

Volkov, 2011). Rural development and farming conditions in the EU are determined by a large variety of challenges caused by different MS' needs and expectations under the CAP. The current CAP cannot uniformly solve all problems of MS. Thus, it is often proposed that MS chose individual decisions itself for adopting and implementing measures [Jankowski 2007]. The CAP would simply provide a solid basis for responding to the current challenges.

In order to prepare for the new programming period 2014-2020 and to determine the problems of the current CAP, the European Commission has initiated various working groups. Many visions of the CAP post 2013 were received from experts of agricultural sciences, producer organizations, non-governmental organizations and national positions from MS, etc. The structure of the CAP evolves and gets new frame in accordance with the various problems in agriculture and rural development across the EU.

Summing up the results of the content analysis, the following CAP development trends can be singled out:

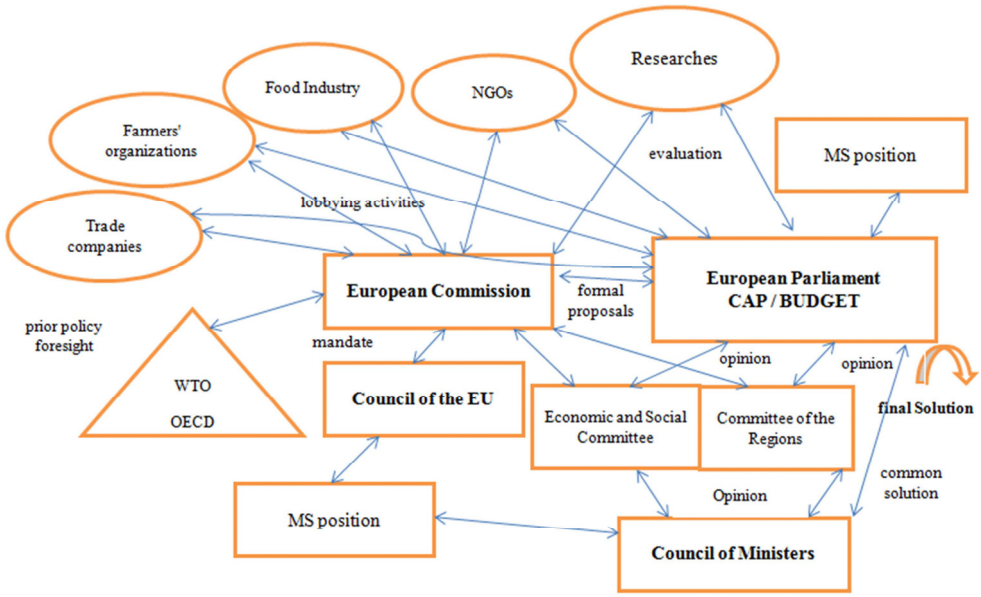
- Food security. Healthy and high quality food.
- Farmer income support.
- Strengthen of competitiveness in agriculture.
- Environmental protection.
- Innovation and research.
- CAP management challenges.
- Global challenges.

However, the difficulties of the new CAP formation are caused by wide difference of national interests due to the expansion of the EU [Volkov, Melnikiene 2012]. Although during the last decade the EU's common agricultural economic data presents positive trends (increase of total agricultural production, increase of exports volumes, etc.), many MS are facing new challenges and problems at the national level.

Taking the fact that with every reform the CAP covers more countries, it's getting more difficult to achieve objectives in agriculture of separate MS.
By 2012 CAP includes 27 European Union countries with different agricultural systems and different levels of rural infrastructure's development. These differences make the formation of the CAP 2014-2020 very complicated, as the political debates concerning new programming period includes larger number of members. Moreover, there has been instability in civic activity of participants representing different interests of society and their role in shaping the CAP. The complexity of 2014-2020 CAP formatting process is also caused by differences

between EU-12 and EU-15 (for example, agricultural employment in new MS significantly exceeds the employment in EU-15; however, the productivity problem is more relevant to EU-12, as their yield is lower and less stable [Berthelot et al. 2011]). Major CAP-formatting participants are shown in Figure 6.

Figure 6. CAP frame: participants in political debate



Source: compiled by the author based on J. Berthelot et al. [2011], 2012.

According to Figure 6, in order to accept all the challenges in the new CAP period significant part of the common political decisions across the EU must be reached and various suggestions on the CAP have to pass such a long way to create formal proposals regulating the CAP after 2013.

9.5. Conclusions

From its beginning the CAP had been one of the economy growth factor in the member states. CAP had been reformed several times. The today's CAP structure of two pillars didn't change since CAP reform - Agenda 2000 Agreement. The CAP with that structure was the first agricultural policy of its kind for ten European countries in 2004.

Accession of Lithuania to the EU has had a strong impact on its agricultural sector. CAP in Lithuania caused a rapid change in farms' structure towards strong polarization, which means that the number of medium-sized farms and utilized agricultural area of them decreased rapidly, while number of large farms and the area of these farms increased. The economies of scale of large farms have been strengthened by direct payment's model. Lithuanian farm structure is still in a shaping process and it is quite different from farm structure in other countries of Baltic Sea region.

According to FADN data in 2010, gross profit with subsidies per 1 AWU of farms with more than 150 ha of UAA differed 12 times in comparison with farms up to 10 ha in Lithuania. Gross profit with subsidies per 1 AWU of farms with less than 40 ha of UAA was less than the annual average salary of those employed. In accordance with weak opportunities of modernization and increasing of the value added of the farms with less than 40 ha of UAA, the number of those farms in Lithuania will continue to decrease in the future.

Large farms in Lithuania can outrival in expansion of agricultural land by offering a higher price or borrowing it at a higher price. According to FADN data in Lithuania, farms with more than 150 ha of UAA, invested EUR 41.8 thousand for agricultural land purchases in 2005-2010 period (approximately EUR 7 thousand per year) while farms between 30 and 40 ha of UAA invested EUR 1.6 thousand (~ EUR 260 per year) and farms between 40 and 50 ha of UAA – EUR 3.1 thousand (~ EUR 520 per year). Comparing difference among farm groups by investing per holding's ha of UAA, the difference is still huge (up to 300 %)

Following the implementation of support measures for rural development (SAPARD, 2004–2006 SPD Priority 4, 2007–2013 RDP) the Lithuanian agricultural policy was focused on the modernisation of agriculture and the increase of intensity. Numerous investments in efficient agricultural machinery reduced the need for labour in Lithuania. In 2010, as compared with 2004, the share of the employed in agriculture and related services in the overall employment structure decreased from 15.2 to 8.2 %.

The plant-growing has become economically more attractive than animal husbandry in Lithuania as a result of decoupling of direct payments from production. The mixed farms with livestock create significantly less income per 1 AWU than the crop farms. According to the FADN data, in 2009 net income with subsidies per 1 AWU in the mixed farms with mainly grazing livestock was by 25 % lower than the national average and 2.3 times lower than in the most profitable farms growing cereals and oilseeds, while in 2010 – by 53 % and 2.5 times.

According to the CAP impact on agriculture in Lithuania, main strategy tasks for the 2014-2020 period were outlined as: to increase the viability of small and medium-sized farms; to increase the value added created in the farms by implementing innovations and stimulating knowledge transfer; to develop animal husbandry by using more rationally the natural and human resources in the country; to create and preserve jobs in farmers' farms by diversifying the activity; to encourage direct sales in agricultural and food products and manufacturers' integration into the food supply chain.

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10. Economic and managerial analysis of the effect of human capital on the growth of horticulture sector in Bulgaria

10.1. Introduction

Vegetable production is one of the traditional branches of agriculture in Bulgaria. In the transitional period as a result of socio-economic transformations, the proportion of vegetable sector in the total plant production was drastically reduced. After Bulgaria's accession to the European Union /EU/ the agricultural sector, respectively vegetables sector, is developing under the Common Agricultural Policy /CAP/. The main objective is the coordination of sector policies, including vegetable growing sector, with the national agricultural policy.

The restoration of the vegetable sector after 2007 is slow and difficult due to deteriorating economic conditions. One of the main reasons for this is the poor vocational - qualification level of the workforce, and ineffective management of human capital. [Bencheva 2011, 2012].

The lack of good management of the human capital as well as the low level of professional knowledge, skills and competencies adversely affect the economic performance of the sector. It is therefore necessary to carry out economic and managerial analysis of human capital and to suggest opportunities for its effective use and management.

The purpose of this paper is to make economic and management analysis of the impact of human factor on the economic situation of vegetable production in Bulgaria.

10.2. Materials and methods

Four group of criteria with their indicators are used for revealing the impact of the human factor on the development of vegetable production. /table 1./ Based on the specifics of the sector, for economic and management analysis in this study, we included the following group of criteria: "Number, structure and experience of employees", "Educational and vocational profile", "Efficiency in the utilization of employees "and "Work payment and incentives". Each criterion contains corresponding indicators which reveal in depth the impact of the human capital on the vegetable production. Indicators are used to present the age and gender structure, work experience, educational and vocational profile, productivity of labor, level of basic and additional payment under the Labor Code and internal regulations in the vegetable-growing farms.

To study the impact of the human capital on the economic situation and development of vegetable production in Bulgaria, 76 farms specialized in growing vegetables have been researched. Most of them are located in the South Central region /SCR/, which grows 44% of the country's vegetables. [Agricultural Report 2011].

For revealing the impact of human capital on the economic performance in vegetable growing, the farms are divided into two groups. The first group contains farms which realized profit. The second group includes farms which reported economic loss for the period of study. The economic result is measured by the level of the profit realized by the farms.

For the purpose of economic and management analysis, vegetable-growing farms are divided in three groups according to their managerial and business type. The first group includes sole traders /ST/ (31%). These are mostly semi-market type small farms. The majority of their production is for local markets. The second and third groups include farm-type capital companies. Sole limited liability companies /SLTD/ come up to 46% of the total studied. The share of the limited liability companies /LTD/ is 23%. Key factors in achieving good economic results, especially in capital companies, are vocational education, training and production experience.

The study covers the period between 2007 -2011. Data is collected through direct contacts, completing reports specially designed for the purpose of the analysis, spreadsheets, company documents, etc. The SPSS (data processing software) is used, designed for processing of statistical data.

Table 1. Criteria and indicators for the analysis of the impact of human capital on the economic situation and development of vegetable growing

Criteria	**Indicators**
I. Number, structure and experience of employees	*1. Total employed in the farm* a/Of which, management *2. Age structure of the management* a/ from 15 to 35 years; b/ from 36 to 55 years; c/ over 56 years. *3. Gender* a/ Men; b/ Ladies. *4. Work experience* a/ to 15 years; b/ from 16 to 35 years; c/ over 36 years.
II. Educational and vocational profile	*1.Education* a/ secondary comprehensive level; b/ specialized secondary education; c/ Bachelor; d/ Master degree. *2.Experience in the specialty* a/ to 15 years; b/ from 16 to 35 years; c/ over 36 years. *3. Specializations* a/ in the country; б/ abroad. *4. Training and use of foreign languages* a/ English; b/ French; c/ German ; d/ Russian; e/ other languages.
III. Efficiency in the utilization of employees	*1. Gross Output from one ha / BGN* *2. Gross Output per employee / BGN* *3. Gross Output one diem / BGN* *4. Gross Output one diem of the management / BGN*
IV. Work payment and incentives	*1. Basic pay and social security of employees in the BGN / Month.* *2. Social additional payments BGN/ month.* *3. Additional incentives BGN / month*

10.3. Results and discussion

Analysis of the impact of the criteria "Number, structure and experience of employees" on the economic situation and development of vegetable growing.

Human capital is defined as a combination of knowledge and skills that lead to increased productivity and efficiency. The quality of human capital in the farms and its effective utilization, largely determine their economic growth.[Tepavicharova 2010; Bencheva, Tepavicharova 2011].

In this regard, during the investigated period it was found that 69.23% of the surveyed farms have achieved positive financial results, i.e. realized profits. The research and analysis of management in vegetable-growing farms which realized profit, reveal possibilities for optimal utilization and development of human capital. During the same period, 30.77% of the surveyed farms declared a loss. Economic and management analysis of this group reveal the state of the economic situation and the issues in vegetable growing.

To specify the influence of the criterion "Number, structure and experience of employees" on the economic performance of the vegetable-growing farms, a survey on the number of employees, their age structure, gender, and length of service was carried out.

Table 2. Influence of the criteria "Number, structure and experience of employees" on economic performance in the vegetable-growing farms

Criterion „ Numbe, structure and experience of employe “ / Indicators	Profitable farms %	Losers farms %	Deviation of losers to profitable %
1. Total employed in the farm	100	100	96,25
2. Of which, management	18,7	22,5	116
3. Age of 15 to 35	14,3	5,6	44,6
4. Age of 36 to 55	48,6	33,3	79,4
5. Aged above 56	37,1	61,1	191
6. Men	65,7	50	87,9
7. Ladies	34,3	50	169
8. Work experience to 15 years	17,1	11,1	74,06
9. Work experience from 16 to 35	48,6	27,8	66,1
10. Work experience above 36	34,3	61,1	207

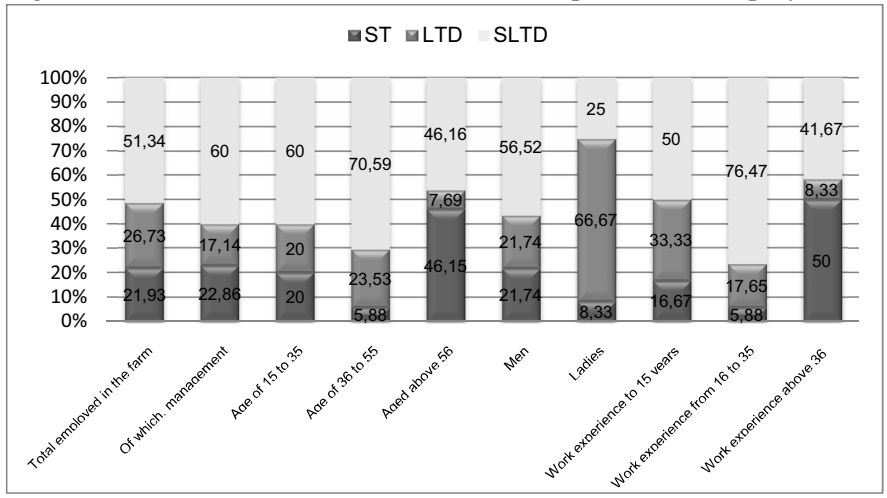
Source: Own calculations

A survey on the profitable farms for the period shows that the management staff members were 18.7% of total employed. In terms of this indicator, in the farms which made a loss, it was established that the management staff is 22.5 % of total employed. Compared to farms with positive results, it is a deviation of 116% (Table 2). The lack of balance in terms of categories of staff, especially in industries with clearly defined seasonal character and periods of intense labor, such as vegetable growing, has a direct negative impact on the economic situation in the farms.

With regards to the age structure of the management staff in the sector, the data shows that in profitable farms, a major problem is the aging of the staff. There is weak continuity of management personnel, as the share of young executives aged 15 to 35 is only 14.3%, compared to 37.1% of the managers above 56.

In the analysis of farm groups, according to their economic organizational structure, a variety in distribution of the different age groups is observed. The largest percentage of managerial staff aged above 56 years is in ST. Simultaneously, managers of up to 35 years also show high percentage. From the above it can be concluded that in this group farms now prefer to employ young executives. This allows them to overcome the problem of ageing of the managerial staff. As for the capital companies /SoleLTD and LTD/ managers aged between 36 and 55 occupy the highest share (Figure 1).

Figure 1. Proportion of farm groups in organizational and economic forms in vegetables under the "Number, structure and experience of employees'



Source: Own calculations

In the vegetable farms which realized loss during the referred period, the analysis of the data shows that nearly two-thirds of managers are over the age of 56, and the number of managers below 35 was only 5.6%. In these farms the aging of executives is a problem. Vegetable growing is one of the sectors in which there is rapid development of innovative technologies and new plant varieties. The shortage of young people in managerial personnel who will rapidly adopt and implement innovations in the sector, leads to lower results and inefficient production.

As for the "Gender" index in the farms surveyed a certain predominance of men over women is observed. It is mostly noticeable for ST, where women are almost three times less than men, and SoleLTD, in which men are twice as many as women. In LTD women prevail in the management team. From the information presented it can be concluded that the gender of the managers do not directly affect the development of the farms that specialize in vegetable growing.

Length of service is an indication of the level of experience of farm managers. It gives an idea of the level of knowledge and skills acquired during practice. In terms of this index, in the profitable farms, a similar percentage as to that of the age groups is observed. The same is established in the analysis of the farm groups according to organizational and economic structure.

From the above stated, it can be concluded that the right recruitment in terms of the balance between managerial and line staff, relevant to the age structure and the experience gained in years of practice, affects significantly the economic situation and development of vegetable production in Bulgaria. A priority is the employment of young managers who will increase the capacity for the implementation of innovative technologies and new varieties, as well as new forms of organization of manufacture and labor. A prerequisite for achieving better production and financial results are the innovations in these areas.

Survey on the impact of the criterion "Educational and vocational profile" on the economic state and development of vegetable growing

In order to determine the influence of "Educational and vocational profile" criterion on the economic state and development of vegetable growing, acquired level of education, professional experience and opportunities for professional skills enhancing were analyzed.

The results of the vegetable-growing farms surveyed for the period 2007 - 2011 are presented in Table 3. In farms with positive financial results, managers with higher education are less than half - 48.6 %. Of these, 34.3% hold a Master's degree, and 14.3% - Bachelor’s. Those with secondary education are

51.4%, of which only 20% hold special secondary education. Unequal payment, unfavorable working conditions, dependence of the production on natural and climatic conditions in the vegetable growing, make this sector unattractive for managers who have a higher level of education.

The results of the survey in groups according to their economic organizational structure indicates that the highest level of education have the managers of SoleLTD (Figure 3). Most of them hold Master's degree. With the LTD the majority of managers have a Bachelor's degree. In the ST group almost half of the management staff have only secondary general education. So far it can be concluded that in the studied farms there is not a system for selecting managers in terms of level of education. The implementation of a comprehensive system for selecting and training of the managers will help to enhance the educational and professional qualification profile of the employees in the vegetable-growing farms.

Table 3. Influence of the criterion of "Educational and vocational profile" on economic performance in the vegetable-growing farms

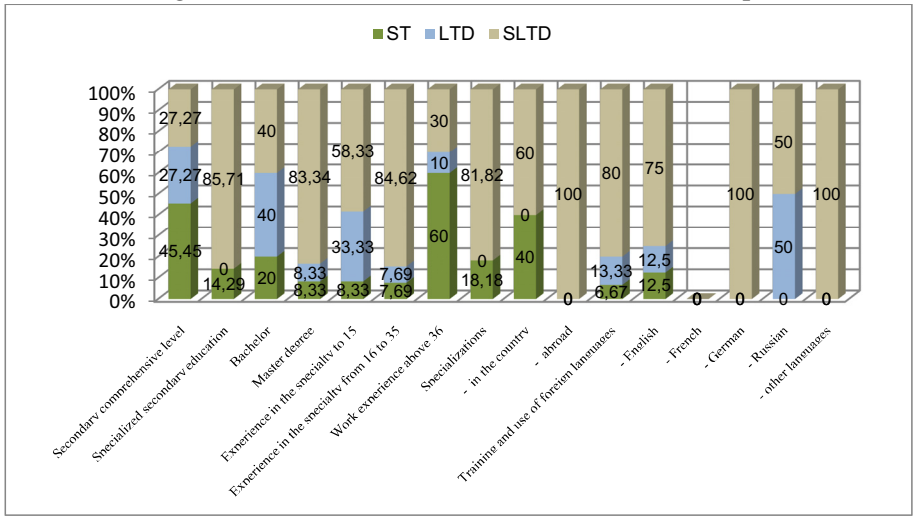
Criterion „ Educational and vocational profile“ / **Indicators**	**Profitable farms %**	**Losers farms %**	**Deviation of losers to profitable %**
1.Secondary comprehensive level	31,4	33,3	123
2.Specialized secondary education	20,0	44,2	256
3. Bachelor	14,3	0	0
4. Master degree	34,3	22,2	95,2
5. Experience in the specialty to 15	34,3	11,1	37,6
6. Experience in the specialty from 16 to 35	37,1	33,3	104
7. Work experience above 36	28,6	55,6	225
8. Specializations	31,4	0	0
a/ in the country	45,5	0	0
b/ abroad	54,5	0	0
10. Training and use of foreign languages	42,9	5,71	13,31
a/ English	53,4	50	28,1
b/ French	0	0	0
c/ German	13,3	50	110
d/ Russian	13,3	0	0
e/ other languages	20,0	0	0

Source: Own calculations.

The farms with negative financial results during the period provoke interest, too. All their managers with higher education have an MA degree, and managers with special secondary education are two times more than those in the farms with positive results. This indicates that the level of education of the managerial staff in farms realized loss in vegetable production does not differ significantly from that of companies with positive financial results. Rather, the cause for the negative results should be sought in the inefficient utilization of the capacity and potential of the managers.

Analysis of the criterion "Educational and vocational profile" considers the indicator “Work Experience”. The longer the professional experience, the higher the quality of the acquired knowledge and the ability of their application. In terms of this indicator, the highest percentage in the researched profitable farms are the managers with experience from 15 to 35 years /37, 1%/. Similar is the data in the other two groups - those having less than 15 years of experience are 34.3% and with experience over 56 years - 28.6%. Close rates in the three groups show that there is a possibility for a certain extent of continuity in the passing down of knowledge and skills in practice.

Figure 2. Proportion of farm groups in organizational and economic forms in vegetables under the "Educational and vocational profile"



Source: Own calculations

The analysis of farms in groups according to their economic organizational structure shows:

- the highest proportion of managers with experience up to 15 years is observed in LTD;

- The group of SoleLTD is dominated by managers with experience in the specialty of 16 to 35 years;
- In ST the overall lower level of education of managers is compensated to some extent by the longer professional experience.

As for the farms where loss was reported, a particularly large share - 55.6% of managers with experience of more than 36 years is reported. The negative results in these units indicate inefficient use of professional experience of managers, which directly affects the economic situation of vegetable-growing establishments.

The study of the "Specialization" throws some light on the differences in the economic situation of the farms. In those which declared profit, 31.4% of the managers have specialized at home and/or abroad. This is a relatively high rate for the agriculture in general. Lower qualification of managers in respect of education and work experience stimulates interest in acquiring new knowledge through further training and specialization. Of importance is the fact that the majority of managers have specialized in abroad - 54.5%. The application of foreign experience and achievements in vegetable farming supposes positive economic results.

The research of “Specializations” indicator in groups of farms according to their economic organizational structure shows significant differences. In the LTD group there is a lack of managers with specializations. Yet, in almost half SoleLTD more than a half of the management staff have acquired specialization, the majority have specialized abroad. In the group of ST an insignificant part of the managers have additional expertise acquired in the country.

The study of the vegetable farms declared loss shows that there are no managers with formal specialization.

From the above stated, it can be concluded that in the vegetable growing sector, upgrading skills and knowledge through specializations in the country and/or abroad has a positive impact on the economic situation of the sector.

The development of vegetable production requires constant improvement of the knowledge of the managers and implementation of the best practices and innovative solutions in the sector globally. This largely depends on the ability to communicate fluently in foreign languages. Therefore, the index "Foreign languages education and application" is particularly important when analyzing the impact of human capital on vegetable growing in Bulgaria.

The study of the profitable farms shows that less than of half their managers /42.9%/ can use a foreign language (Table 3). 53.4% of them speak English. German and Russian is spoken by 26.6% of the managers (13.3% each)

and 20% of managers said they used other languages daily and at work. The highest percentage of managers who speak foreign languages is found in the LTD group. English, German, Russian and other languages are used in these farms. In the LTD group the highest percentage of managers speak Russian. In the ST group a small percentage of managers speak English.

Applying foreign languages allows easy access to global scientific achievements in market gardening. This helps to continuously update the knowledge of the managers. Implementation of the latest techniques and technologies in production leads to achieving a positive economic performance in vegetable-growing farms.

Analysis of the impact of the criterion of "Effective utilization of employees" on the economic situation and development of vegetable growing

The efficiency of utilization of employees as a key factor in assessing the impact of human capital in the vegetable farms combines the level and quality of knowledge and skills and their application on the human capital in the production process. [Bencheva 2011, 2012]. Research on labor productivity in vegetable farming allows us to understand how and to what extent the qualification of the managers affects the final economic results.

Table 4. Influence of the criterion of "Efficiency in the utilization of employees" on economic performance in the vegetable-growing farms

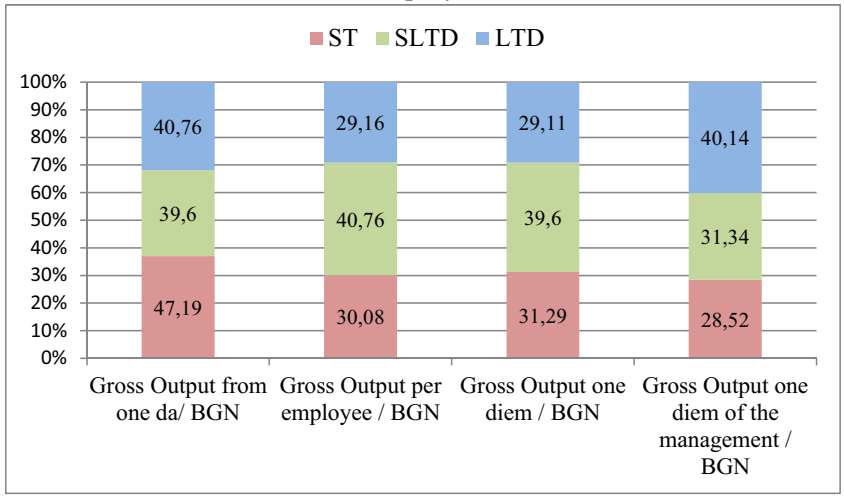
Criterion „ Efficiency in the utilization of employees" / Indicators	**Profitable farms $\bar{x}$**	**Standard error of average μ**	**Losers farms $\bar{x}$**	**Standard error of average μ**	**Deviation of losers to profitable %**
Gross Output from one da/ BGN	1670,5	132,36	817,47	148,13	48,94
Gross Output per employee / BGN	6244,95	506,79	6135,85	1058,04	98,25
Gross Output one diem / BGN	24,78	4,15	22,35	8,14	90,19
Gross Output one diem of the management / BGN	144,43	26,89	109,93	36,22	76,11

Source: Own calculations.

Table 4 shows the average values of the research on labor productivity in the vegetable farms in the period between 2007 and 2011. It is evident that the output of one ha/BGN of the farms realized loss is less than half of those realized profit /48.94%/. The ratio of the output of one man-day of the managers /BGN of the farms with loss compared to the same index of the farms with profit in vegetable growing is 76.11%. This result indicates that low farm productivity is the result of poor management and adversely affects the economic situation of vegetable farming.

Figure 4 shows the share of the vegetable farms grouped under "Efficiency of utilization of employees." The output of one ha/BGN is greatest at ST - 47.19%. The production of a man-day of managers/BGN is the highest in LTD. This is due to the fact that the managing decisions are not made solely, unlike ST and SoleLTD.

Figure 3. Share of agricultural groups stopanstvaspored organizational and economic shape in vegetable under the „Efficiency in the utilization of employees"



Source: Own calculations.

Analysis of the impact of "Work Payment and Incentives" criterion on the economic situation and development of vegetable farming

Work payment and material incentives measure the return on labor and energy on behalf of the human factor in the manufacture of certain products. The employees are motivated to effectively carry out their tasks in the future when the remuneration is adequate to their efforts. Financial incentives to a great ex-

tent attract more and better qualified human resource in the sector. [Teparicharova, 2012].

Looking into the influence of the criterion "Work payment and incentives" indicates that the additional incentives of the managers with the farms declared loss is significantly less than in the farm declared profit /almost 50%/. This is due to the fact that the factor additional incentives is related to the economic results – the better the production results, the higher the additional incentive.

Table 5. Influence of the criterion of "Work payment and incentives" on economic performance in the vegetable-growing farms

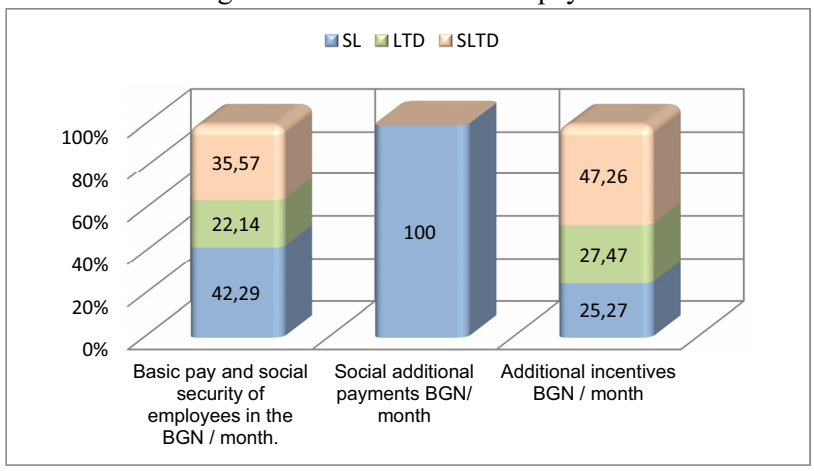
Criterion „ Work payment and incentives“ / Indicators	**Profitable farms $\bar{x}$**	**Standard error of average μ**	**Losers farms $\bar{x}$**	**Standard error of average μ**	**Deviation of losers to profitable %**
Basic pay and social security of employees in the BGN / Month.	727,78	22,03	720	57,59	98,93
Social additional payments BGN/ month	6,67	6,67	0	0	0
Additional incentives BGN / month	101,11	13,06	50	18,87	49,45

Source: own calculations.

The specifics of work payment in the different groups of farms according to their organizational structure are presented in Figure 4.

In the group of ST, basic salary and social payments are the leading element of remuneration, while the additional incentives have a relatively low share. In this group of farms various social programs are used, aiming to motivate their employees to achieve higher performance, depending on the purposes of the farm. With LTD, social payments are not leading, but additional incentives have a relatively high share of total income. The payment is arranged similarly in SoleLTD. The income is allocated between basic salary and additional incentives.

Figure 4. Proportion of farm groups according to their organizational and business formav vegetables under the " Work payment and incentives"



Source: own calculations.

The results of the study in vegetable growing show that even in farms declared profit, wages are relatively low. Additional incentives are received in the form of social payments to salaries, which are minimal and in most cases only succeed in compensating for inflation over the period. Part of the researched farms applies other incentives. Additional bonuses apart from the basic salaries are paid in case of fulfillment of the production plan. This extra incentive is largely dependent on the decision of the sole owner or owners of the farm, making it largely uncertain in the modern conditions.

10.4. Conclusions

In the study of the impact of human capital on the economic situation and development of vegetable production in Bulgaria the following conclusions are drawn:

- ✓ A major problem in vegetable farms that needs to be solved immediately is the aging of the management staff. A priority must be given to lower the age of the managers. This will increase the capacity of farms to implement innovative technologies and new varieties, which is a prerequisite for achieving better economic results.
- ✓ Proper recruitment, reciprocal to the age groups and experience gained from years of experience, as well as the optimal balance between man-

agement and line positions have a significant impact on the economic situation of vegetable farming.

- ✓ Increasing qualification and expanding of skills and knowledge through further specialization are major factors for effective management and achieving of positive production results.
- ✓ Highly educated and trained workforce is able to produce more and better products. From this point, investment in human capital increases individual productivity.
- ✓ Higher productivity should be reflected in increase of remuneration which motivates and keep staff and on the farms.
- ✓ Awareness of the fact that high performance and lasting success can only be achieved through a good strategy in the management of human capital, which are the main driving force for the development of any economy.

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11. Agriculture and rural development – the case of Norway

11.1. Introduction

This paper aims to discuss the role of agriculture in rural development in Norway. The question is how institutional factors and public policy work to reach a main goal for agricultural policy in Norway: to contribute to a decentralized settlement pattern. The context for such a discussion is the well-known fact that the relative importance of agriculture for employment and settlement in rural areas has decreased dramatically during the last decades. Much of the decrease is obviously explained by a pressure towards higher productivity in farming, triggered by technological development and increasing external competition. But I argue that part of the explanation also has to be found in institutional factors and policy failures, particularly how legislation on agricultural property and a farm and community focused development policy are counterproductive for reaching the multifaceted goals of Norwegian agricultural policy.

11.2. The policy context

In a long term perspective, agricultural policy in Norway has gone through several phases. For the first three decades following World War II, mechanization and more efficient production were main goals. In order to raise the level of welfare in the society, the workforce had to move from agriculture into industries with higher productivity. From the mid 1970's, however, increased agricultural employment came to be viewed as a remedy for the loss of population in rural areas. New support schemes were introduced in order to improve the farmers' living standards and the investment levels in agriculture. The hope was to halt the reduction in agricultural population, but the new policy was only partially successful. Agricultural employment decreased at almost the same pace as before.

In the globalised environment of the 1990's, an agricultural development based on heavy production subsidies also became less tolerable. The equalization doctrine was now replaced by a new doctrine emphasizing the multifaceted functionality of agriculture (Hegrenes, 2002]. As a result, agricultural and food

policy in Norway today is considered as a tool to reach several and sometimes conflicting goals.

One main goal is food safety, understood both as reliable food supply, a certain degree of self-sufficiency in food production, and the production of safe and healthy food for the customers. Another goal is competitiveness and profitability in the agricultural sector. Sustainability is the third main goal. The last class of goals is related to the geographical distribution of farming, aiming at use of agricultural land in the whole country and using agriculture as an instrument for rural development. Increasing rural employment and population is thus an explicit main goal for Norwegian agricultural and food policy.

Table 1. Goals in Norwegian agricultural and food policy.

Food safety	**Agriculture in the whole country**	**Value adding and profitable agriculture**	**Sustainable agriculture**
More sustainable food production	Keep agricultural land in production	Competitive value chains and robust units	Protect agricultural land resources
Safe food and adequate nutrition	Contribute to a decentralized employment and settlement pattern	Good knowledge environment	Production of environmental goods
Take care of customer interests	Policies adapted to regional opportunities and conditions	Competitive incomes	Contribute to diversity in nature
Being a constructive international actor			Contribute to solution of climate problems
Develop Norway as a food nation			Reduce pollution from agriculture

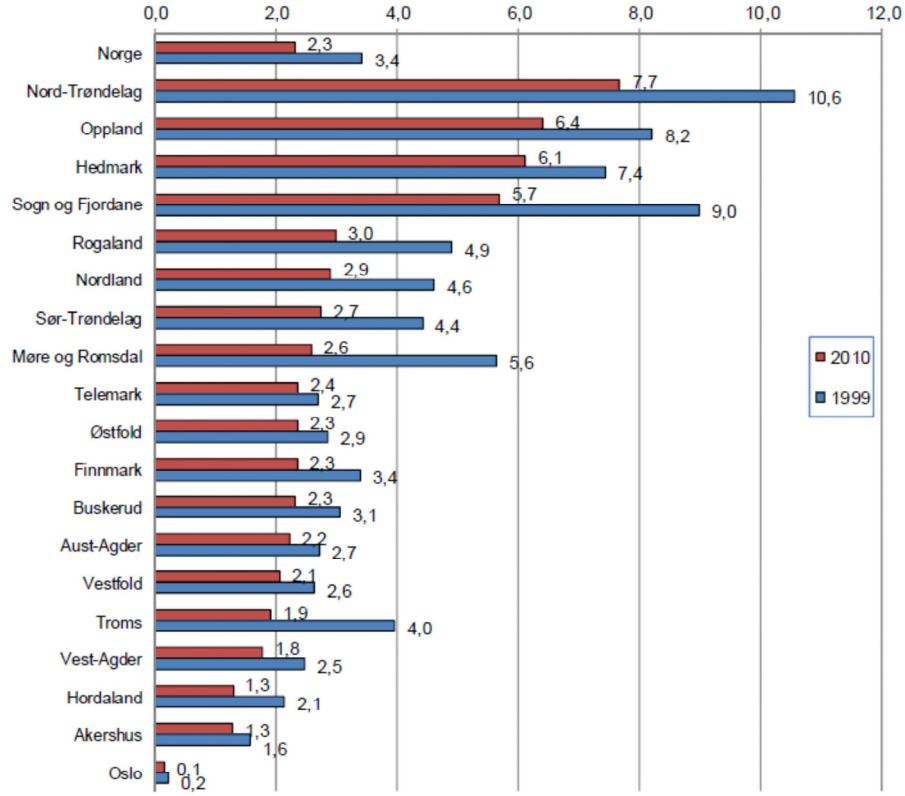
Source: (Stortingsmelding, 2011-2012 no. 11:15]

11.3. Agricultural employment – overall trends and geographical distribution

The employment in agriculture and forestry is currently about 2.3% of total employment in Norway. In 2010, about 55 000 persons were employed in agriculture and 7 000 in forestry. This is a 33% reduction since 1999. Agricultural employment exceeds 3% in only four of the 19 counties.[20]

[20] The food industry employed 48 000 persons in 2010, about 8 000 of these were employed in fish processing. The remaining 40 000 also includes employment based on raw materials from other sources than Norwegian agriculture.

Figure 1. Employment in agriculture and forestry in Norway 2010 and 1999 in % of total employment, national and county level.



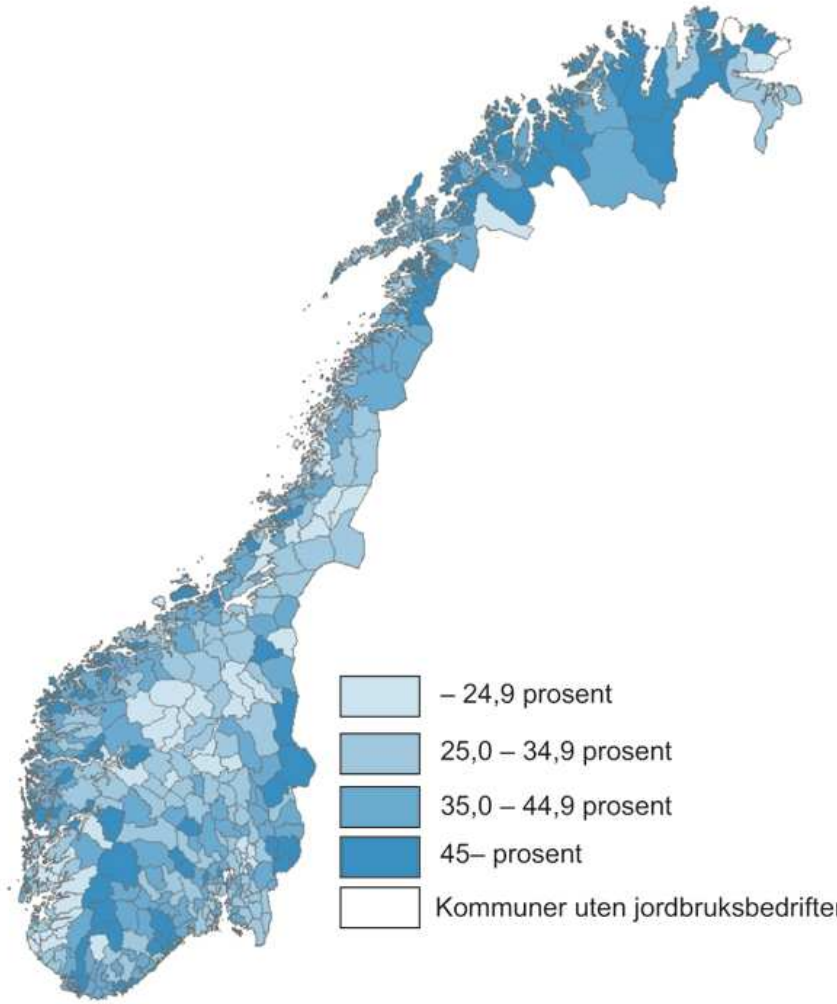
Source: SSB and Panda, reproduced from (Lien, 2012]

Even if agriculture no longer delivers an important contribution to overall employment figures in most regions, there are many communities where agriculture still plays a larger role. Agricultural employment is 10% or more in about 150 municipalities, many of them small municipalities in peripheral areas. But it is also in those municipalities we find the highest reduction in agricultural employment. The reduction is bigger in the peripheral regions than in the regions surrounding bigger cities (Stortingsmelding, 2011-2012 no. 11:97].

The reason for this territorial development pattern has to be found in an unequal growth for different agricultural products (Stortingsmelding, 2011-2012 no. 11]. Poultry is growing at a quicker pace than any other product, approximately doubling every decade. The production of pork and vegetables is also

steadily growing. All these are more or less industrialized productions with relatively low demand for land. A decreasing number of farms produce an increasing output, and the bulk of the production takes place in the proximity of city regions.

Figure 2. Reduction in the number of agricultural enterprises 1999 – 2009, in %



Source:[Stortingsmelding, 2011-2012 no. 11: 97]

On the other hand, the productions typical for peripheral areas show a declining trend both in terms of production and employment. This holds true for sheep, cattle, milk and potatoes. These productions are more dependent on land,

and the relatively small holdings which dominate peripheral regions are not particularly well suited for efficient production. Keeping the prices competitive is not easy in spite of price subsidies.

Table 2. Change in volume for agricultural products 1969-2009

Production	1969-79	1979-89	1989-99	1999-2009
Poultry	98%	95%	92%	133%
Egg	15%	27%	-10%	17%
Pork	26%	14%	20%	13%
Beef	38%	11%	22%	-8%
Milk	9%	4%	-9%	-9%
Sheep	2%	33%	-1%	1%
Vegetables	12%	17%	9%	19%
Grain/oilseed	94%	16%	26%	-16%
Potatoes	-5%	-15%	-7%	-6%
Fruit	-2%	10%	-44%	-1%
Garden berries	8%	-52%	-32%	23%
Flowers	20%	28%	16%	-1%

Source: [Stortingsmelding, 2011-2012 no. 11: 88]

11.4. Income sources for farming households

Altogether, there are 46 600 economically active agricultural enterprises in Norway. But these enterprises are not the main source of income for most of the farming households [Stortingsmelding, 2011-2012 no. 11:43]. Less than 25% of the family incomes in farming households are stemming from agriculture. Slightly over 10% comes from self employment in other sectors. This self employment may in some instances be based on resources provided by farming. Agricultural tourism and small scale food processing are typical examples. On the other hand, over half of the family income is salaries from employed work. And the share of family income from farming is decreasing. Ten years ago, it was approaching 30%. Today, farming is a part time activity for most farming families. Family farming usually means that at least one member of the household is employed outside the farm. Often both adults in a family have full or part time jobs outside the farm.

A consequence is that the living conditions of farming families do not only depend on the development within the agricultural sector. The overall employment opportunities within the local labor market region will have a major influence of the total income and living conditions for most farming households.

11.5. Property structure and agricultural production

Another striking feature of the development in Norwegian agriculture is the increasing gap between the property holding structure and the structure of agricultural production. While there are only 46 000 active agricultural households, the number of registered agricultural properties is over 185 000 [Stortingsmelding, 2011-2012 no. 11:200]. Only a quarter of the agricultural properties are run by the owner. There are people living in 121 000 farm houses, or about two third of the properties. As many as 50 000 farm buildings are empty. In most of these cases, the owner lives outside the farm and often uses the farm for recreational purposes.

Most of the agricultural land, however, is still in use. Usually, agricultural land not used by the owner is hired to an active farmer. Only marginal land has been taken out of production. Most of the active farmers do hire land in addition to their own farms. 40 % of all agricultural land is now hired, a doubling in 30 years. For many types of agricultural production, changes in productivity makes it necessary to increase the size of farm units.

11.6. Development trends and policies

Taken together, the data show an agricultural sector which is losing both in employment numbers and regarding economic relevance for rural families. The loss of agricultural employment is even bigger in the more peripheral regions, showing that the policy goal of agriculture as a tool for regional development by no means is reached. In the remaining part of the paper I will discuss whether institutional factors and policy failures are part of the explanation for this situation. The question is how current policies and institutional arrangements produce territorial effects to the detriment of rural communities in the periphery.

Firstly, I discuss the effects of the increasing cleavage between property structures and production structures. I argue that institutional factors, particularly allodial rights and residential obligations, do not produce the intended effects for agricultural and rural development. The second case concerns the decreasing role of traditional agriculture for the income of farming households. In a situation where more than half of the income of a farm household stems from employed work, a farm and community centered development policy should be replaced by an employment policy focusing on the development of wider labor market regions.

11.7. The property structure - a problem for settlement and efficient farming

The property structure in agriculture is regulated by a complex set of acts, including Odelslova (Allodial Rights Act), Konsesjonslova (Concession Act) and Jordlova (Agricultural land Act).

The Allodial Rights Act regulates the inheritance of agricultural property (in cases where the property size exceeds 20 decares). Children and grandchildren of a property owner are allocated inheritance rights in a certain order. If an agricultural property is sold out of a family, the Act gives family members the right to take the property back. This right is given not only to direct descendants of the former property owner, but also to more distant relatives. The law also implies a price regulation for a family take over (åsetesrett).

The Allodial Rights Act is built on rules which have been acknowledged as law in Norway for at least a thousand years. Allodial rights are also protected in the constitution. Their original intention was to protect against too much division of agricultural holdings due to division of an estate between the inheritors. But an unintended effect is that the Act makes is risky for a new owner to pay market price for an agricultural property or to invest in an acquired property. If another person's right to the property is ranked higher in the Allodial Rights Act, this person is allowed a cheap take over. Hence, the Act works against efficiency improvement in agriculture. The detailed rules regulating allodial rights have been modified through revisions of the act in 1995 and 2009, but the basic principle is maintained.

Even if the owner do not intend to run the farm in the future, it is very difficult to get a permission to sell out the land and keep the farm house. The Allodial Rights Act makes it obligatory to keep the property together. It is often argued that this must be done in case the next generation with inheritance rights should want to run the farm.

Originally, the Allodial Rights meant that the owner of a property had to run the farm personally. A revision of the act in 1995 made it possible for an owner with allodial rights to lease the farm land to an active farmer. But the Agricultural land Act claims that the owner of an agricultural property has to live at the farm. There is an exception for smaller farms (below 100 decares total or 20 decares cultivated land) only.

Laws on residential obligation in Norway are not restricted to agricultural properties. It is also possible for a municipality to enact residential obligation for family homes, in order to prevent them to be used only for seasonal and recrea-

tional purposes. 80 municipalities have rules claiming residential obligation. But for non agricultural properties, it is possible to rent the building to a tenant who then will fulfill the residential obligation.

Outside Norway, laws on residential obligation are not very common. In EU, Denmark, Poland and Austria are the three countries which have implemented such legislation. The EU court has judged against the residential obligation in two cases, one regarding an agricultural property in Austria and one in Denmark [Aanesland, 2008]. Since Norway is a member of EEA, decisions by the EU court are binding also for Norwegian legislation. So far, only minor changes have been made in Norway's legislation. But a recent sentence by the Supreme Court ran in favor of a farm owner who opposed a resident obligation made by the municipality [Nationen, 2011].

The defenders of the Allocial Rights Act argue that the Act promotes a sense of responsibility of stewardship for agricultural property, thus protecting the land resources for the future [Flemsæter, 2009]. Others argue that a replacement of the allodial rights and an increased use of market mechanisms would lead to higher prices for agricultural property and a higher inclination to sell [Aanesland, 2008; Aanesland & Holm, 2006].

Currently, there are more than 50 000 agricultural properties without full time settlement. Many of these are defined as second homes for seasonal use, due to the exception from residential obligation for smaller farms. According to a recent survey, 45% of the owners of these properties say that they will not sell the property at any price [Flemsæter, Storstad, & Kroken, 2011]. They use it as a second home and want to keep the property in the family. Some of the houses that are not used by the owner are rented, either to full time tenants or for seasonal use. Only 21% are permanently uninhabited. Potentially, about 30 000 agricultural properties could be offered in the market given the right market price. The problem today is that price regulations in many cases are keeping the price for those properties artificially low. Even if the owner might be willing to sell, the regulations in the Allodial Rights Act keeps the price to low.

As a result, many owners of those properties try a range of avoidance strategies in order to avoid selling the property for a low price. Many farmers keep the property rights after they retire, even when they move from the farm. In some cases, a deceased person's estate keeps the property rights for several years. The land is rented, and the buildings are often not maintained. When a takeover is done within the close family is done, the new owner can get exception from the resident obligations.

Altogether, the regulations in the Allodial Rights Act in many cases work in the opposite direction of what was wanted. Rather than keeping an agricultur-

al property as an efficient production unit, it promotes transfer to seasonal use. Keeping the farm for seasonal use is cheaper than owning a standard recreational property. Even where the farm is not in use, to sell out can be regarded as a bad alternative due to the price regulations.

It is not easy to decide the overall effect of a new regulation regime based on free trading of agricultural property. But an indicator of the negative effects of the current regime is found in a research project comparing a Swedish and a Norwegian county. In the Swedish county, with no residential obligations, a higher share of agricultural properties was all year homes [Aanesland, Holm, & Labugt, 2004].

11.8. Increasing income opportunities for farming households

The three most important income sources for farming households are employed work outside the farm, agricultural income and income from self employment related to farming. Traditional agriculture counts for a decreasing share of the total incomes for farming households. More than half of the income for farming households consists of salaries for employed work outside the farm.

This situation may in principle be met through different types of policies. One alternative is to make traditional farming more profitable. A second alternative is to support farm related activities like tourism or small scale processing. The third alternative is to expand the local labor market and hence job opportunities outside of farm.

Since the income from traditional farming is a combined product of market prices and state support, this income can to a certain degree be influenced by national policy. But international agreements, particularly WTO-agreements, restrict the scope of action for national policies. Production subsidies and other support for Norwegian farm product are close to the agreed ceilings. A certain reduction in the level of subsidies for farm units and products are more probable than an increase. In a foreseeable future, national policy measures cannot replace productivity increases if one wants to increase profitability in traditional farming. Income increases in traditional farming, then, will probably not be a policy measure which can halt the decrease in agricultural employment. This does of course not mean that such policy measures are unimportant. They are vital for the core farmers who try to build value adding farming businesses, and they may be an important part of the total picture for a part time farming family facing the decision of whether to continue farming or not.

Policies for developing farm related activities outside traditional agriculture has been a part of agricultural and regional policy measures since the 1990's. Most of those activities are related to tourism and small scale processing of farm products. Several policy programs for entrepreneurship in rural areas are financed by the Ministry of Agriculture and implemented in cooperation with Innovation Norway.

After more than twenty years with this kind of programs, other self employment than farming counts for about 10% of the incomes in farming household. Public statistics do not make a distinction between different types of self employment in farming households, and we are not able to point out exactly the contribution of farm related innovation. A majority of farming households report that they are utilizing farm resources to develop new activities, but the revenues seem to be small.

Regarding community focused development strategies, the Rural Development program (Bygdeutviklingsprogrammet] is the core policy measure financed by the ministry of Agriculture. A comparison of the Polish Leader program and the BU program in a Norwegian region showed that the BU program to a lesser extent was focused on creating new employment, even in a region where the program is considered to be a success [Chmielínski & Bukve, forthcoming]. This may indicate that new farm related industries, in spite of their achieved results, will not be sufficient to halt the decrease in agricultural production.

As showed in the introduction, employed work outside the farm now accounts for more than half of the income of farming households. Consequently, the opportunities in the local labor market may be decisive for the settlement decisions of current and potential farming families. The problem is that many of the marginal farms are located in small labor markets with too little diversity in job opportunities. National policies have for several decades focused on living conditions and small scale business development in such small communities. In spite of these efforts, about half of the 430 municipalities are losing population.

An obvious policy alternative is to focus on enlargement of the local labor market through better communications and innovation support for small and medium sized towns. Almost 90 % of the Norwegian municipalities, with at least 97% of the population, are today integrated in about 100 local labor market regions. About 50 small municipalities are too remote to be included in any of these regions. Contrary to the rural areas, most small and medium sized towns have a growing population and employment. Research shows that for many young and well educated young people who have inherited a farm or want to buy one, jobs related to their education are the most important factor behind a

decision to move to the countryside. Adequate employment - full or part time - in a growing regional centre might be an attractive opportunity for those people. But most Norwegian regions are lacking plans and policies for regional enlargement. It must be admitted that it is much political talk about regional enlargement. But when it comes to hard political decisions and policy implementation, local interests usually trumps. This is much due to the political structure with 430 municipalities, with borders that divide possible regional units. Local labor market regions are crucial for economic activity and prosperity, but they are politically neglected. Local politicians prefer state financed projects in their own communities to broader regional projects, and national politicians give them their projects in exchange for political support.

If the goal is to reduce or stop the decrease in farming population, policies for regional enlargement and employment outside the farm obviously cannot stand alone. It is also necessary that agricultural work and other farm related work is paid well enough to make it an attractive element in a household income.

11.9. Conclusion

The development of the agricultural sector, in Norway as elsewhere, has to take place in a context of increased globalization. International institutions, particularly WTO and EEA, influence the scope of national policies. International agreements give a country certain rights to compensate for comparative disadvantages caused by geographical factors. Apart from that, international institutions promote a competitive environment and a need to increase productivity and efficiency in the agricultural sector.

In Norway as elsewhere, a smaller number of efficient farms are delivering a greater share of agricultural production. Only one of four registered agricultural property units are still economically active, and the decrease in farming is particularly high in peripheral regions. This is a big political problem in a country where agriculture is regarded as an important tool for employment and settlement in the periphery. And even for the farm households, farming now counts for less than one quarter of the family income. For most farmers, farming is a part time activity. Employment outside the farm is more important for the family income than farming.

In the paper, I highlight two kind of institutional and policy failure which sustain a situation where agricultural efficiency and competitiveness is reduced without gaining significantly regarding the settlement goals for agricultural policy. The Allodial Act impedes the growth of more efficient production units, and it also creates incentives for the owners to change the status of agricultural properties into properties for recreational use. A farm and community centered innovation policy

has been quite inefficient in creating a considerable number of new jobs. A development policy with a broader focus, aiming at creating more integrated labor market regions, would give better job opportunities for people who want both to live in a rural setting and have a job that is relevant for their education and career.

A thriving agricultural sector and a decentralized settlement pattern cannot be achieved through the same set of policies. Hence, policies for agricultural development in the periphery should focus on efficient and sustainable agricultural production, while a decentralized settlement pattern could be better promoted through other kind of policies.

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12. Agricultural policy supporting the structural development of farms and other rural enterprises in Finland

12.1. Introduction

Finnish agriculture and rural areas have experienced a strong structural change during the 18 years period in the EU membership. At the same, decreasing number of farms and increasing farm size have influenced also social structures of rural societies. Such a big change would not have been possible without the program based funding from the EU and corresponding national funding. For the natural disadvantages due to the location on the northernmost edge of the Union permanent aids for the agricultural production are necessary for managing in tightening competition of the single market. In addition to the agriculture the program based support of the EU has been used also e.g. for information, training projects and developing of other industries on farms, and during the present program also for investment and starting aids of micro and small rural enterprises without the agricultural background. Leader approach and public funding have been used for projects of general interest in rural communities such as improving of assembling houses in villages, developing of rural enterprises and adding possibilities for free time activities of local people. [Rural Development Programme 2012].

In the following, structural development of agriculture and changes in profitability of the production are examined by means of statistics available mainly from the beginning of last decade to 2012. Because of the poor farm structure economic targets in agriculture have strongly supported increasing of the farm size and efficiency of the production. In addition to the economic targets ecological sustainability and ethically acceptable production have also significant and increasing importance in the rural development. Another strategic alternative has been extending other branches of industry on the farm. Many of the smaller farms have taken this challenge and have invested in e.g. contract work, farm tourism or other services in addition to the agriculture and forestry. Financing from the EU's Rural Development Programs has accelerated widely

the rural development and helped to keep also the most remote areas still inhabited. [Puurunen et. all 2004, Rural Development Programme 2012: 56-58].

12.2. Structural change of farms

12.2.1. Increase of the farm size

During the EU membership the total number of farms has decreased 36 % in Finland. Decrease of the number of farms has been the greatest in Eastern Finland and the smallest in the northern parts of the country (Table 1). At the same the average size of farms has grown from 23 hectares to 37 hectares. Total arable area has increased 5.6 % and it was in 2011 about 2.3 million hectares. Enlarging cattle farms have cleared new field area closer to their farm centers. Structure of the farms is the best in the southern parts of the country and the worst in East Finland. Average size of fields is the smallest in Province of South Savo, 26 hectares. [Yearbook of Farm Statistics 2012:43-46].

Table 1. Number of farms and receiving agricultural support in 1995 and 2011 and average arable land (ha/farm) in 2011 in Finland.

	1995	2011	Change, %	Ha/farm
Whole country	95 560	61 150	36.0	37.25
Southern Finland	43 100	27 578	36.0	40.81
Central and Western Finland	24 790	15 770	36.4	34.51
Eastern Finland	17 710	10 810	39.0	31.34
Northern Finland	9 960	6 700	32.7	38.52

Source: [Finnish Agriculture 2012:14]

Especially in Eastern and Northern Finland farms are typically surrounded by forests and lakes. Nearly all farms own forest, on average 50 hectares per farm. In South Savo forest area is 70 hectares per farm. The forest area per farm is the greatest in Northern Finland, but the mean annual increment of growing stock on forest land is the best in Eastern Finland (7.3 m^3/ha, 3.1 m^3/ha in North. F.). [Finnish Statistical Yearbook of Forestry 2011:77].

Two thirds of the Finnish farms practice crop production, in the southern parts three forth and in the eastern and the northern parts over half of the farms. Dairy husbandry is most general in Eastern and Northern Finland, about 30 % of the farms, whereas in South Finland the share of dairy farms has fallen under 10 %. Also the share of beef production is biggest in the eastern and the northern parts, ab. 10 %. Most of the pig farms are in the southern and the western parts of the country, ab. 5 % of the farms. [Finnish Agriculture 2012:17].

Even though crop production is most general production line in Finland, cattle farms have more importance in the economical sense. The share of cattle production from the gross return of agriculture is double as much as crop production. Number of dairy farms has decreased ab. 10 000 per 10 years, in 2011 they totaled ab. 11 000 farms. [Finnish Agriculture 2012:90, 92]. Most of the dairy farms have quitted animal production, but are continuing crop production. Average size of dairy farms is still small, only 25.4 milking cows per farm. [Yearbook of Farm Statistics 2012:60]

Number of animals has increased most on the biggest farms. E.g. during last decade number of dairy farms increased most in the farm groups over 40 cows but during last few years only the farms over 50 cows have increased. Biggest farms have most modern technique in their use, e.g. over 8 % of milk farms have milk robot or other automatic milking system. In 2012 one third of milk quantity was produced in cattle over 50 cows, but it is estimated that in 2016 over half of the milk production will come form the large dairy farms [Heikkilä et al. 2012:54].

12.2.2. Profitability as a precondition for the growth of farms

Increasing the farm size and efficiency of the production are necessary measures for achieving a better profitability in agriculture especially in long run, even if relation between returns and costs can result also from more or less permanent changes in prices or other changes in production environment. Finnish profitability research of agriculture turned 100 years but in spite of the long traditions it has been predecessor of modernizing the bookkeeping system. The profitability research also performed a basis for the FADN bookkeeping in Finland [Latukka et.al. 2012].

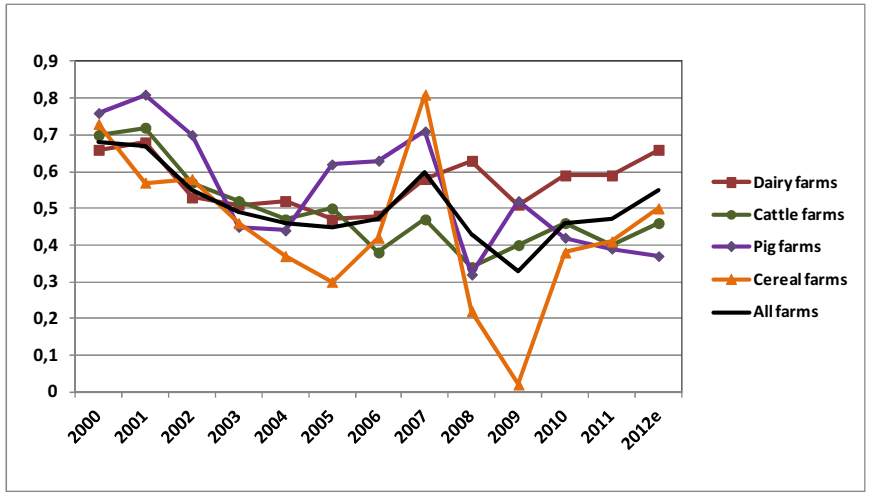
Profitability coefficient is an old indicator for comparing economic results of different farms, but during last times it has been taken into use also in the Advanced FADN results as Profitability Ratio. The profitability ratio is calculated by dividing Family Farm Income (FFI) by the sum of costs for family factors, i.e. the wage claim and the interest claim of agriculture (opportunity costs of family labour and equity). [MTT Economydoctor 2013]. In 2011 the profitability ratio was grown to 0.47. This means that the entrepreneurs received 0.47 % of the wage target of 14.10 € and interest target of 6.5 % (earlier 5.0). Estimated results in 2012 refer to a rise of the profitability ratio to 0.55. [Finnish Agriculture 2012:57-61].

On average the profitability ratio has decreased from the year 2000 during the whole decade and reached the bottom value of 0.33 in 2009. After that the development has been better. Weather conditions influence to some extent profitability of agriculture, but it has not been a bad crop failure since 1998/-99 [Finnish Agriculture 2012:21-23]. The profitability figures in different production types have been quite the same in the beginning of decade, but from the year 2005 the profitability of cereal farms and pig farms has varied more than ever. Reasons for the variation come from the global changes of grain prices. On dairy farms the profitability ratio has not varied much during the whole decade. In the beginning of 2010 decade dairy farms were most profitable production type (Figure 1). [MTT Economydoctor 2013]. Although the number of farms has decreased at a rate of 2.8 % a year during last decade because the small and middle size farms have given up production, the profitability of agriculture on average has not risen correspondingly. Without the continuous structural development mean values of the profitability had been much worse.

According to the scale effects a bigger production unit is more profitable than a smaller one which is precondition for reasonable investments for enlarging of the production. In the FADN the enterprises are classified to the size groups on the basis of the standard gross margins. This method makes the comparison between size classes of the crop farming and animal husbandry possible. In the following only results of dairy farms are examined. In 2000-2011 the profitability ratio varied on smaller dairy farms quite a lot but on low level. Because many small farms leave the replacement of fixed assets undone especially if they are planning to give up production, their economic results are still apparently better than in reality with the full depreciations. Bigger farms have had 0.1-0.2 unit better profitability than more average dairy farms. Farms in the economic seize group over 250 000 € have not been represented in the Finnish FADN data before 2005 and also at that time they were quite few (Figure 2). [MTT Economydoctor 2013].

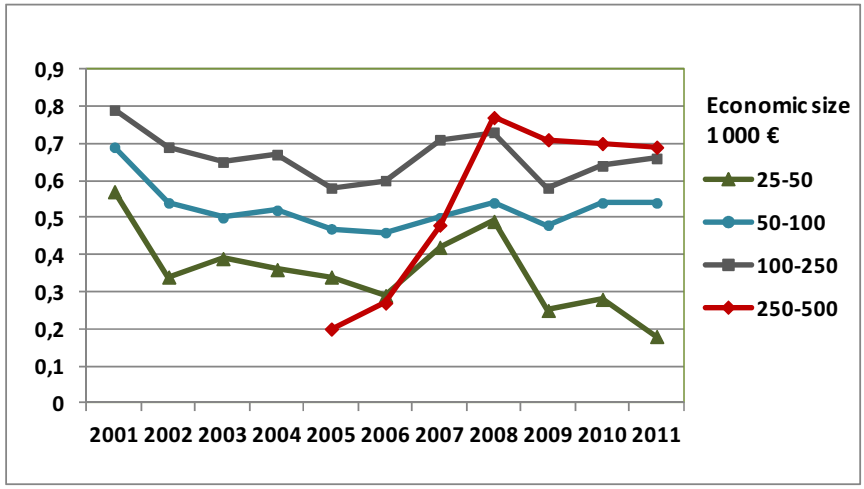
The profitability ratio of the biggest dairy farms was at first really low due to the large investments on these farms, but it rose during a couple of years to the highest level, when they got their production to the full speed and also the number of the farms in the FADN sample increased and brought more variation into the farm group. Still the difference of profitability in two biggest size groups of dairy farms is quite narrow. In the long run the scale advantages of biggest dairy farms will be probably more notable, when the financial burdens for the enlarging investments are diminishing on majority of the farms.

Figure 1. Profitability ratio by production types in 2000-20012e in Finland



Source: [MTT Economydoctor 2013, Agriculture and horticulture].

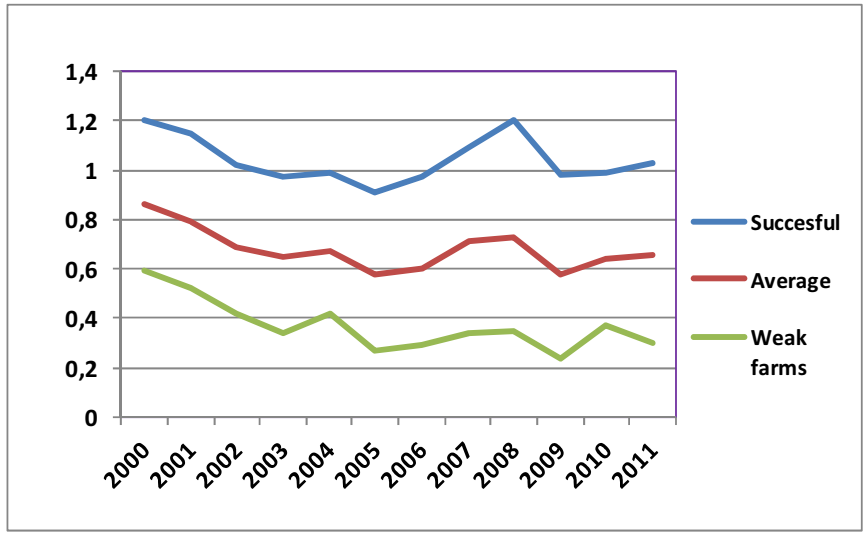
Figure 2. Profitability ratio by economic size on dairy farms in 2000-2011



Source: [MTT Economydoctor 2013, Agriculture and horticulture].

Profitability ratio of the farms varies also in the same size group and production type for different production conditions, managing skills of farmers and many other reasons. On the weakest dairy farms in the size group 100 000-250 000 € the profitability ratio has been mainly under 0.4 where as the most successful farms have reached the profitability target of FADN farms and in the best years even exceeded it. The most successful farms have more field, higher gross return and also slightly higher variable costs than in weaker farm groups (Figure 3).

Figure 3. Profitability ratio on dairy farms in economic size group of 100 000- 250 000 € according to the economic success of the farms.



Source: [MTT Economydoctor 2013 Agriculture and horticulture].

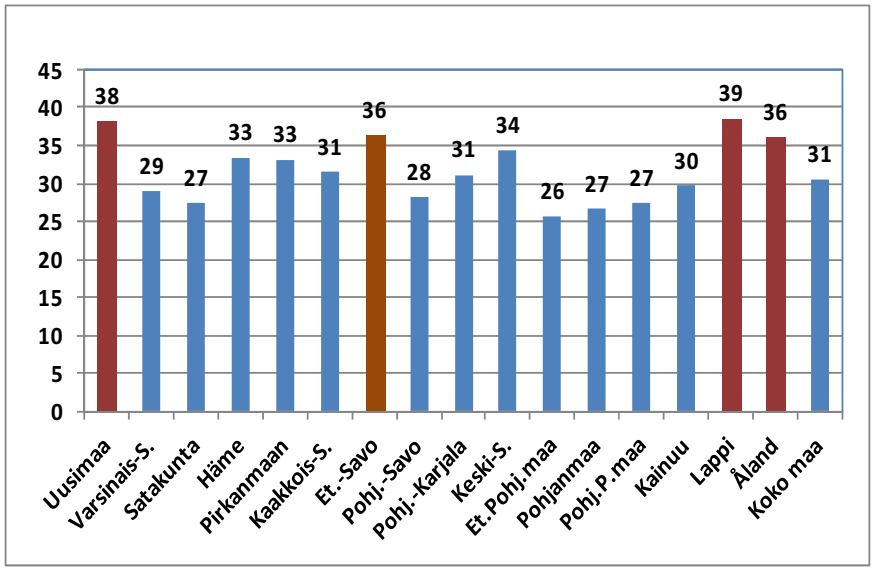
Rapid enlargement of farm size or number of animals challenges the managing skills of farmer and this is often the most crucial element in differences of economical success between farms. In Finland the rural advisory organization, which is partly financed by the state, has taken the challenge to quide the farmers enlarging the agricultural production and the young farmers in the beginning of the farm management. Rural Development Program serves financing for helping farmers to reach better profitability e.g. via "setting up young farmers" and "vocational training and information" measures. The financing is project based and it is granted to private and public law bodies for advisory and developing services. [Rural Development Programme, 2012:83, 92, 95].

12.3. Diversified farms

Farm families get their livelihood typically from many sources. Nearly all farmers specialized in agriculture have forestry and most of them do contract work for rural enterprises and inhabitants. Farm tourism with lake side cottages is general industry especially on the smaller farms in Eastern and Northern Finland. Caring old people and different well being services are also generalizing on rural areas.

Diversified farm has some other line of business in addition to the agriculture and forestry. The share of farms with diversified production was in 2010 on average 31 % of all farms. In 2000 the share of diversified farms was 27 % and in 2005 35 % of farms. Number of diversified farms slightly increased in 2005 but for the general decrease of the number of farms also the diversified farms have decreased. In 2011 they were ab. 19 500 farms. The share of diversified farms is highest in the counties of Lappland, Uusimaa and South Savo and in the autonomous area of Åland. [Other entrepreneurship 2010]. Lappland is popular for the winter tourism and South Savo in Eastern Finland is the centre for summer tourism as also Åland Islands lying at the entrance to the Gulf of Bothnia in the Baltic Sea. Uusimaa is located near the capital area and for this it serves better possibilities for many kind of business also for farmers.

Figure 4. The share of diversified farms (%) of all the Finnish farms in 2010.



Source: [Other entrepreneurship 2010:3].

About 75 % of diversified farms had services as a line of business, 14 % had industry whereas trade, construction and primary production were more quite rare lines of business except in Northern Finland, where the reindeer husbandry raised the share of primary production. [Other entrepreneurship 2010:3]. The measure of "diversification into non-agricultural activities" has been in use during the present Rural Development Program as well as in the former Program. Diversified farms can make a good use of different kind of development projects also under measures "encouragement of farm tourism" and "training

and information". All of these measures for diversified farms can be implemented also as Leader approached projects. [Rural Development Programme, 2012:214, 229].

12.4. Financial measures supporting the structural change of farms

12.4.1. The present rural development program

During the program period 2007–2013 rural development has been steered through the two parallel programs defined for Mainland and the Åland Islands. Previously work was conducted under six separate programs. Rural development aims to maintain the viability and vitality of rural regions, enhance the environment and ensure that renewable natural resources are used sustainably. The present program consists of four axis and 24 different measures. [Rural.fi, Rural Development program, Aims and tools].

Ministry of agriculture and forestry (mmm.fi) is responsible for preparing the rural development program of Mainland Finland. Paying office of the ministry (mavi.fi) supervises implementation of the program. 15 areal Centres for Economic Development, Transport and the Environment (ELY-keskus.fi) keep care of implementing of main parts of the program according to their own areal rural development plans which the ministry has accepted. ELY-centres answer for the implementation of axis 1 and 3 and certain parts of axis 2. Support for less favored areas and basic parts of environmental compensations in axis 2 are paid by municipalities. Local action groups (LAGs) have also their own local rural development plans for Leader approach projects accepted by the ministry. There are 55 LAGs in Mainland and one in Åland [Rural.fi, Finnish Leader].

Rural Development Program for Mainland has about 6 770 million euro public funds in its use from which the share of the EAFRD was 2 136 million euro including also additional contributions for so called new challenges. Share of the EAFRD in axis 2 is 28 % but in other axis 45 %. The state is responsible for the national share of the public financing. In the end of 2011 ab. 70 % of the EAFRD's share was reserved by financing decisions and form that it was paid ab. 60 %. Finland was in the group of five countries which have implemented the program briskly and used most of their share of the EAFRD. The good utilization rate of the public founds is caused by axis 2 and the support of less favored area and environmental compensations which both are based on five years agreements. [Vuosikertomus 2011:3].

Axis 2 consists of ab. 80 % of the public funds in the whole program (Table 2). Natural handicap payments, i.e. support for less favored areas are

ab. 54% and agri-environment payments ab. 43 % of the funds in axis 2. Five year agreements for lfa-support cover 93 % of farms and ab. 95 % the total area of arable land. Environment agreements were nearly as popular. Rest of the funds in axis 2 is for animal welfare and non productive investments.

Table 2. Preliminary allocation of funds of the Rural Development Program for Mainland Finland 2007-2013.

Public funding	1000 €	%
Axis 1. Improving the competitiveness of the agricultural and forestry sector	545	8
Axis 2. Improving the environment and the countryside	5 465	81
Axis 3. Quality of life in rural areas and diversification of the rural economy	458	7
Axis 4. LEADER	253	4
Technical aid	50	
Total	6 770	100

Source: [Rural Development Programme for Mainland Finland 2007-2013/5.10.2012:261].

Investment aids for farms consist of 37 % of the funds of axis 1. Setting up of young farmers as well as project based information and vocational training both are ab. 16 % of the funds of axis 1. During the preset program period in the end of 2011 e.g. 526 young farmers had got decision for setting up aids, 554 dairy farms, 212 other cattle farms and 61 green houses had got permission for the EU' partly financed investment aids from the 15 areal ELY- Centres.

Axis 3 consists of seven measures. Diversification into non-agricultural activities was 7 % of the funds of axis 3, creation and development of micro-enterprises 46 % and encouragement for tourism activities 6 %. Rest of the funds in axis 3 is reserved for measures to improve quality life in rural areas.
The local action groups shear quite small part of the funds. Leader funding is possible to use on all measures in axis 1 and 3.In Axis 2 Leader-funding can be used for some environment agreements and non productive investments for rural societies. Contrary to the ELY-Centres possibility the action groups have also measure for inter-territorial and trans-national co-operation projects in the program. [Rural Development Programme 2012:261].

12.4.2. Preparing for the new program period

Preparing for the program period 2014-2020 is continuing on the ministerial level in numerous large working groups on the basis of a set of legal proposals the Commission has designed in October 2011 for reforming the CAP.

An outline of the new rural development program is expected before summer 2013. On the local level the ELY-Centres with the rural interest groups have prepared areal strategies for rural development in 2014-2020 during the autumn 2012 and in the beginning of 2013 they are continuing the work for areal rural development plans. The action groups are doing their strategies and local development plans a little bit later. [MMM 11.5.2012:1-13].

According to the agreement of European Council on the EU budget 8.2.2013 the funds for rural development in Finland will remain close to the current level but the direct supports will decrease. An envelope of 600 million euro for rural development will help e.g. in implementation of the environment program. The structural funds for Eastern and Northern Finland will decline from 35 € to 30 € per inhabitant, which can increase demand of the rural development funds on these areas. The net payment from Finland to the EU will decrease from 0.34 % to 0.31 % of the GNP. The Finnish Government has impressed to be satisfied with the reached result. Rural development funding will safeguard a strong basis for sustainable and modern agriculture in Finland. [Finnish Government 8.2.2013].

12.5. Conclusions

Domestic agricultural production is very important in Finland for numerous reasons. Relatively high support level is needed for compensating the disadvantages for northern production conditions even if it makes farmers dependent on the national and the EU policy and also on the opinions of consumers and taxpayers. So far majority of the Finnish consumers have accepted quite high agricultural aids and also supporting the other rural development.

Structural development, i.e. enlarging farms and adding productivity has to continue for making possible better profitability, competitive farm enterprises and securing qualified products for consumers. Another way to develop the livelihood of farm family is diversifying farm activities. In addition to the farm aids the rural development program has supporting measures also for micro and small rural enterprisers without agricultural background.

Finland has implemented the present program and used the funds for rural development briskly according to the original plans and for that it is very important to secure financing for the transitional period and the start-up of the new program without any longer delays. The fresh agreement of the EU budget for the new program period gave sound bases for Finns to continue planning a new well acting program and for developing the vast rural areas for years ahead.

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13. Economic crisis in rural areas of the Czech Republic and Slovakia

13.1. Introduction

Market oriented economies are always developing – and the present situation is not an exception – in certain economic cycles, while one of their phases is marked as a recession, depression or economic crisis [Samuelson 1992]. Many renowned economists were and still are interested in explaining the origin of economic cycle, As an example, are listed [Klvačová 2009] the following theories and their authors: monetary [Hawtrey, Friedman et al.]; innovative [Schumpeter, Hansen], psychological [Pigou, Bagehot], under-consumption [Hobson, Sweezy], political [Kalecki, Nordhaus, Tufte], balanced economic cycle [Lucas, Barro, Sargent] and the theory of real economic cycles [Prescott, Long, Ploser]. Above all, the author underlines the Keynesian and monetary theory[21]. With regard to the present world economic crisis, also other authors are returning to the above mentioned theories in their theses, e.g. P. Krugman who tries to distinguish the so-called "vulgar" form of the Keynesian theory from the real heritage of Keynes [Krugman 2008]. P. Kohout [Kohout 2009] pointed out, the same as T. E. Woods [Woods 2010] the ideas of the so-called "Austrian school"represented by its founders Ludwig von Mises and August von Hayek, who regarded the artificial creating of monetary reserves in the economy, notwithstanding their origin, as incorrect, as in the consequence of such state interventions into the natural way of the economy, wrong investments occur. And wrong investments can lead the economy into grave difficulties – as it is shown by the present crisis.

[21] The Keynesian thery is concetrating on the explanation of the economic cycle through the aggregate demand and the internal instability of the economy, while the monetry therory is based namely on the monetary instruments controlling the volume of money in the economy.

A question is presented, why the crisis appeared in such a synchronised form almost all over the world? We know the Schumpeter's warning on the "disappearing investments", or the Keynes' [1947] statement on the so-called "bubbles", saying that a healthy economy cannot be endangered by the emergence of bubbles, if they do not become the sense of own business in itself. In a similar way, even if in other words, J. B. Foster and F. Magdoff [Foster, Magdoff 2009] pointed of the problem of a correct investment decision-making and the mistakes leading to the origin of the already mentioned economic bubbles, what is supported above all by the origin of the so-called shadow banking and the widely accepted moral hazard institutionalised in the form of central banks.

As the crisis always brings about negative phenomena represented namely by the increasing unemployment, unstable price level [either in the form of inflation or deflation], a bankruptcy of a higher number of firms and other, a discussion whether and to which extent to regulate market economy. [Klvačová 2009] e.g. points out the fact that the top brains of the U.S. utilised their intellectual potential to find the ways how to go around the rules, i.e. the regulation, but, on the other hand, she adds that capitalism is not self-creating, sustainable self-regulating nor self-stabilising. On the contrary, T. E. Woods sees as the only possibility of regulation limiting of the central banks, so that they could not „print money"at will. He views the possible crash of the firms as a consequence of the crisis as an economic recovery and not as a tragedy [Woods 2010]. Similarly, also in [Schumpeter 1939], is regarded the economic recovery as complete only in the case it comes by itself and if it is not regulated. Also V. Hvozdíková mentions in her essay the fact that the present crisis is not a market failure, but rather a failure of the state and the banking sector, and she regards the crisis itself as a certain form of the "Schumpeter creative destruction", when an automatical clearing of the markets should occur, what is not much helped by the state interventions [Hvozdíková 2009].

The above mentioned facts thus lead the authors of the article to the opinion that the present economic crisis is to a considerable extent the result of insensitive interventions into the economy and wrong regulation. The authors do not think that it is possible today still to leave the economy without certain limitations. A healthy economic growth, however, cannot be reached with the help of credits to the public sector [Pavelka, 2009], since that could get, owing to the debt trap in which is at present e.g. Greece, into growth difficulties.

The crisis has specific features in the rural space. Partially, the countryside is an economically self-contained area, which is traditionally tied to agriculture and the connected activities [e.g. processing industry, chemical industry, constructions, machinery industry and other sectors of the national economy]. At

the same time, countryside was always in the history the background of the big cities and industrial areas, commuting of the rural population always belonged among the most usual ways of securing rural employment.

The impacts of the crisis differ in the individual regions. Because rural regions represent, however, an important part of every national economy, the authors of this article aimed their attention just on them and are comparing the opinions of the experts on the crisis phenomena of Czech and Slovak countryside.

13.2. Methodology

The tool for acquiring the data was an electronic questionnaire sent to the experts from different institutions [research, educational, advisory, public administration and other]. Data collection went on from October 2009 to January 2010. The sample of the respondents began to amplify according to the "snowball"technique and reached over the Czech border. We have then extended the research first into Slovakia and then, after good reflections, also to the colleagues of other countries.

The deep-sample brings much interesting information; however, it can be interpreted only with a certain apprehension. We have attempted a certain comparison between the nearest neighbours – the Czech and Slovak Republic. The number of Czech experts is approximately three times higher [26 Czechs to 9 Slovaks]. However, we are not aimed at the representative sample, but on the content and depth of the answers, so that it is possible to use also the questions from the incomplete questionnaires.

Among the Slovak respondents, there prevailed research workers and these employed both in education and research. These groups are the most numerous also among the Czech experts, however, individually there are included also the experts from the public administration, services, business and extension. In both republics, the public sector prevails and the non-profit sector is represented by one expert each. In the Czech Republic, there are included also 5 experts from the private sector.

Statistical processing of the acquired data is, with regard to the character of the sample, of only a supporting role. The answers of the experts were analysed namely from the viewpoint of the content and depth of the evaluation of the crisis impacts the social and demographic structure of rural population and the role of the political and economic representatives with the solution of the crisis.

13.3. Results and discussion

13.3.1. The reasons and impacts of the economic crisis in rural areas of the Czech Republic and Slovakia

The accosted experts evaluated the reasons of the economic crisis in their country with regard to the rural areas. The majority of the experts from the CR regards as important factors causing the origin of economic crisis the following: economic stagnation, the world banking sector, and its problems, irresponsibility of the bank institutions, weak national governments and the dictate of the supranational institutions. These factors were found in the majority as important also by the Slovak experts. However, besides the mentioned factors, Slovak experts also regard as important for the origin of the crisis also: a low number of the entrepreneurs and their competitiveness, the present functioning of the financial sector, constructions, automotive industry, the dependence on the high-energy consumption, a high level of bureaucracy of national institutions and a low efficiency of the local and regional institutions.

Czech experts are not unanimous regarding the question of the importance of the latter factors. Only about one half of Czech experts regard them as important. The reasons of such a big difference in perceiving the reasons of the crisis between the experts from the CR and SR have got to be searched individually regarding each factor. For example, in the case of constructions, car industry and perhaps also the low number of entrepreneurs, this difference in opinions can origin mainly owing to the different development of both countries. Insensitive interventions of the Czechoslovak government on the support of the modernisation of Slovakia since the end of the WW 2 were concentrated on the sectors which have had no great tradition and they cause great structural problems even at present [Vimrová 2009]. Regarding the factors as e.g. the bureaucracy of national institutions, a low efficiency of the local and regional institutions and the insufficient extension services, from the area of countryside, the opinion of Slovak experts is proved also by the study performed by E. Láštic, who concludes that Slovakia suffers from an insufficient level of stability of the national administration [Láštic 2010], what can be reflected, according to the authors of this study, also in its performance.

An agreement was reached among the Czech and Slovak experts regarding the environmental factors, which are evaluated as unimportant from the present crisis origin viewpoint.

When searching the question whether the countryside is more heavily impacted by the present crisis than the town[22], the Czech experts answered in majority yes, while the Slovak experts were divided into two equal groups, when the Slovak experts living in the countryside presented the majority of negative answers [that the countryside is not more heavily impacted than the town], while the Slovak experts living in towns inclined more to the positive answers [countryside is more heavily impacted by the present crisis that the town]. Regarding Czech experts, both groups [both experts living in the countryside as well as living in towns] answered in the same way - the majority of them regards the countryside as being more heavily impacted by the present crisis. If we regard the differences in the opinions of Slovak experts [differing by the place of their abode] as unimportant with regard to sustaining the objectivity in evaluating the countryside and towns, we can conclude that Slovakia is equally impacted by the present crisis in towns and in the countryside. However, if we admit the fact that even experts are influenced by their place of abode, this opinion cannot be accepted without certain reservations. Then, we rather have to state that there probably exist some facts for which the questions included in the questionnaire are not able to find the explanations.

A certain difference is obvious also in the answers regarding endangering of the individual rural areas[23]. For the purposes of this research, rural areas were divided into the following categories: sub-urban, in-between, peripheral, rural areas with agricultural profile and rural areas without agricultural profile.
When searching the answers of the respondents from both countries, it was found out that with the growing distance from the town centre, Czech experts evaluate the given areas as being endangered by the present crisis more often than the Slovak ones. Czech experts are more specific in this problematic, they still see the countryside, compared to towns, as more endangered and impacted by the crisis than the Slovak experts.

Opposite to Slovak experts, Czech experts are also more afraid that the development of rural areas will be influenced by the crisis for a longer time period[24] - the answer "yes" was chosen by one respondent from the CR, while none of the Slovak respondents chose this answer. However, as it were shown by the next question[25] mapping the phenomena occurring in connection with the

[22] The question read: "Do you think that the present economic crisis impacts the countryside more heavily than the town?"
[23] The question read:„"Which rural areas are, according to your opinion,more endangered?"
[24] The question read :"Will the present crisis influence the rural areas development for a longer time?"
[25] The question read: "Have you registered any of the following phenomena connected to economic crisis in your coiuntry?"

crisis, Slovak experts have shown a higher level of clear-cut opinions compared to their Czech colleagues. An unanimous "yes" was expressed by Czech experts only regarding the phenomena: loss of the trust in the governmental politics, a growth of criminality in the rural areas, increased drug, cigarettes and alcohol abuse and also dampening of environmental activities. Slovak experts also agreed on this, but with a much higher share of the answers, Slovak experts are also of the opinion that the crisis brought about many phenomena in the social sphere, as e.g.: social tension, transfer of social services into households, a higher competitiveness instead of cooperation, perceiving social impacts as worse than the economic ones. Regarding the economic phenomena, Slovak experts point out the accelerated depletion of the financial reserves of households. Neither Czech nor Slovak experts suppose that the crisis would lead to a higher social cohesion or cooperation. Very uncertain and divided in opinion were experts from both countries regarding positive contributions of the crisis in removing the non-functional entrepreneurial structures. Even if the economists [Woods 2010], [Krugman 2009], [Kohout 2009] and other regard this opinion as relevant on the general level, it is obvious that the experts regard the countryside as so specific that they did not lean in any substantial majority to any of the unanimous answers.

To get a more complex picture on the present situation in the countryside and the phenomena bothering these areas at present, we have included an open question searching the opinion of the respondents on the present state of the countryside.[26] The respondents from the CR supplemented the previous question by the characteristics of the type of high unemployment and too little job opportunities [majority of respondents] and further respondents from the CR point out the lack of financial resources. Included is also the bad demographic situation connected with migration of rural population into towns, the lack of free time activities and the opportunities of education or mentioning the insufficiently functioning local self-administration [what was mentioned also in the previous answers], agriculture impacted by the crisis or the decline of services for rural population. These supplements to the closed questions were supplied namely by the respondents interested in the rural problematic on the professional level.

[26] The question read: "Can you shortly characterise the present situation in rural areas?"

13.3.2. Social consequences of the crisis in the rural areas of the Czech Republic and Slovakia

The impacts of the economic crisis are reflected gradually into the rural population life. The scale of the impacts is wide and they can be reflected with a different intensity. The respondents expressed the importance of the economic crisis impacts on rural areas in their countries[27]. The majority of Czech respondents includes among the most important impacts the growth of unemployment in the countryside, closing up of the small businesses [farms, workshops of food industry etc.] and closing up of shops in the villages [groceries, mixed shops etc.]. On the other side, the crisis does not fully impact on the sphere of public and social life [sport and cultural clubs, societies, sustaining local traditions etc.]. Both Czech and Slovak experts are of the opinion that closing of the educational institutions in villages [kindergartens, primary schools, school clubs, children interest groups etc.] cannot be included among the impacts of the economic crisis. If these disappear, it has not only economic, but also other reasons [demographic changes, different organisation of personal and family life etc.] It would be difficult to distinguish among the different reasons. Slovak experts do not, in difference to the Czech ones, underline some of the reasons as being especially important; their answers are evenly distributed into all categories.

The crisis impacts all size categories of the municipalities; it cannot be generally sated that smaller communities are more socially coherent, what helps them to overcome the economic crisis[28]. On the other hand, Gajdoš [2008] is of the opinion that namely Slovak municipalities up to 500 inhabitants have a much lower chances for the successful development. Ensuring different activities and services through self-supply was always usual in the countryside. The reason lay in their absence or a lower offer, sometimes a lower quality and a relatively high price. The transfer of many other paid services into the households and their supply through self-help presets only a continuation of this trend. In small municipalities, most people meet each other daily, so that it is easier to organise the help of the relatives, neighbours and friends. In bigger communities, other communication channels are functioning and other kind of contacts, which need not, however, to be less efficient. The transfer of different activities into households has another negative consequence, an additional workload for the family members, less free time for resting, education, entertainment and children.

[27] The question read: "How important are the following impacts of economic crisis on rural areas in your country?"

[28] The question read: "Which are the most visible impacts of the crisis in rural areas of your country?

In both the Czech and Slovak Republic, there are emerging, according to the experts, the difficulties regarding repaying credits and mortgages and search for an additional income brigades, temporary jobs, second jobs etc.]. However, the rural space does not offer so many job opportunities. The time limited and temporary jobs are still more difficult to get and their economic efficiency declines. The firms as well as private entrepreneurs are saving as well.

The economy model of Czech and Slovak households is changing. Social differentiation of rural population goes on, some social groups have no financial reserves, they have problems to cope with securing the daily needs, they orient on cheaper foods and other goods. On the country level, the number of property executions for not repaid credits and mortgages decreased in 2010 [Hospodářské noviny, 15. 9. 2010][29], however, this decrease is not caused by a higher solvency of the debtors, but by a higher apprehension [both of the inhabitants as well as the credit institutions]. The asked experts were in majority not able to evaluate whether rural households were limiting their social and cultural life or using their cars. The rural way of life is specific from the cultural and social viewpoint; culture and social life do not represent any important items of the family budget. On the contrary, travelling by private transport means [cars, motorcycles] is necessary for the functioning of the household and family and it cannot be much limited. Using public transport is not the question of choice, but of the possibility. If it is missing, then using own transport is necessary. The experts also agree that the increase of self supply is not much obvious with regard to the crisis.

Rural population copes with the crisis in a similar way both in the Czech and Slovak Republic[30]. The growing unemployment is solved in different ways, by commuting on longer distances, accepting less favourable work conditions and a lower remuneration. The differences in opinions of Czech and Slovak experts are not important. For some social groups, the crisis impacts are more difficult. The CR experts regard[31] as the most handicapped group women 50+, but they think that the situation of some other social groups is not favourable either [young people without practice, women after maternity leave or men 50+]. To this, there correspond also the answers of the respondents from Slovakia, who are most often of the opinion, that it cannot be decided which group is most endangered, as all mentioned social groups are handicapped in the same level.

[29] m.ihned.cz/c4-10132710-46437120-700000_hndetail-narust-poctu-exekuci-se-po-letech-zastavuje

[30] The question read: "How important are in your country the following impacts of the economic crisis for rural population?"

[31] The question read: "Which group is the most disadvantaged during the economic crisis in rural areas?"

13.3.3. The role of the rural communes' representatives

Development of the countryside of the Czech and Slovak republic after 1989

The position of rural society in the former Czechoslovakia has changed radically after 1989. These changes included the processes of privatisation, restitution and transformation of agriculture [Majerová 2009].

The respondents are of the opinion that there exist considerable differences in solving the economic crisis between the countryside and towns. According to the recommendations of the experts, it is necessary to cope with the economic crisis as a whole, it is not possible to speak about the solutions in the countryside and to leave out towns, as these are the "connected vessels"

Everything what will help the national economy as a whole will also help the countryside. Rural areas are the "policy-takers", the crisis can be only mitigated on the local level or to be adapted to it.

Regarding the system financing from the national centre or from the EU, the respondents recommend a change of the system of the state budget redistribution for the municipalities and the necessity to increase the level of the countryside financing [the Act on the Budgetary Distribution of taxes – the disproportion between the finances flowing into the countryside and towns], what would among other, help the municipalities in co-financing of the EU projects. Further, they recommend the financial support of agriculture at least on the same level as in the other EU countries, support of the small services development from the state funds, creation of the industrial zones and clusters utilising the endogenous resources [production of timber, sale from the farmyard, direct sale from the producer, production and processing of agricultural products and food] and the improvement of efficient extension services for the municipalities.

Activities of the political representatives

The regional and local political life observes different rules than in the political centre[32]. The personalities and their relationships are of a much higher importance there. On the local level, there appear subjects which cannot be found anywhere else, sometimes there origin political connections impossible on the national level [Čmejrek 2001]. The small distance between the citizen and the elected representation in the rural community influences the form of the local politics considerably, the party and ideological mediation is superfluous and it is often understood as a disturbing element, which divides the local community [Čmejrek 2008].

The empirical deep-search has shown that the communal representatives play a different role in solving the problems brought about by the economic crisis in the rural space. The importance of these public functions in solving of the problems was positively evaluated by the Czech Republic respondents[33] regarding the mayor, communal representation and the businessmen living in the commune. The importance of the mayor and the locally living businessmen was also positively evaluated by the Slovak respondents. Those also regard as important the social workers, this fact is probably connected with a higher unemployment level in Slovakia [compared to the CR] and further, according to e.g. [Gajdoš 2008], with the decrease of the number of inhabitants and the accelerated ageing of the population in Slovak countryside, what brings about a higher demands on the social services utilisation.

The respondents also evaluated the importance of the rural communities´ representation[34] in solving the problems caused by the economic crisis. The majority of the Czech Republic respondents are of the opinion, that the rural communes' representatives play an important role in informing the citizens on the possibilities of employment, social support and the like, in forming important contacts on different levels, in the preparation of the rural municipalities' development projects, securing investments into infrastructure and in public labours.

Also Slovak experts find the role of the communal representatives important regarding information on jobs, supports and social supports, the preparation of development programs, securing investments into infrastructure and pub-

[32] In the czech Republic, the community representation organs are the representation, mayor and the Communal Office, while the highest organ of the commune is the community representation [Čmejrek, 2001].

[33] The question read: "Which publicly active persons are in your country usually most important in soolving the problems caused by economic crisis?"

[34] The question read: "What role is played in solving the problems of economic crisis by the representatives of rural municipality/mayors?"

lic labours. Most of the Slovak experts are further of the opinion that the rural communities' representatives play an important role in helping people to solve the daily life problems.

The respondents also formulated the recommendations for the political representatives' activities. For solving the impacts of the crisis in the countryside, the active functioning of the municipalities is necessary, also the responsibility and the qualification of the political representation and the law feasibility. Further, there is necessary an active mayor as well as citizens, and the active partner cooperation between the municipality and the businessmen and the municipality and agricultural enterprises.

13.4. Conclusion

In searching the causes, manifestations and impacts of the present economic crisis in the Czech and Slovak rural areas, the authors met with several interesting and important facts. The economic crisis phenomenon itself through which the problematic of the mentioned rural space was perceived did not always allow to decide unanimously and precisely, which problem is caused by the crisis and where, on the contrary, there reflected only a trend rooted in the pre-crisis period. Notwithstanding that, the answers of the experts from the given countries brought about a deeper insight into the functioning of the crisis itself in the countryside as well as on the life in this social space and in this phase of the economic cycle.

Among them there belongs the fact that the reasons of the crisis were found by the Czech colleagues in the factors of the national and supra-national nature, while Slovak colleagues also underlined these causes as important, but also added to the reasons of the local character. By doing so, they admitted the existence of the negative influence of the present countryside from "top-down", as well as the negative elements of the endogenous character. In the case of the valuation of the present phenomena, Czech experts did not concentrate only on purely social questions having an indispensable role in the endogenous development theories, but, on the contrary, by the majority agreement found the support for their statements in the purely economic problems areas. Compared to that, the Slovak colleagues expressed agreement in the economic as well as social factors of the crisis, what was connected also to their more pronounced underlining of the role of institutions helping to solve many negative phenomena of rural society. Thus, the problems of Slovak countryside appear as more complex and extensive than in the Czech case, what is not caused by the economic crisis only, but by the character of Slovak countryside characterised by a higher

social differentiation and a greater ethnicity, which does not always lead to the non-problematic common life of the rural society.

Differences are found also in the evaluation of the crisis phenomena in the countryside compared to towns. Czech experts expressed a certain sceptical approach and labelled Czech countryside as more endangered by the crisis, and that namely the regions of a greater distance to the centre. They expect many problems even after the crisis is terminated, as a consequence of the crisis period. Slovak experts, however, regard Slovak countryside as impacts by the crisis on the same level as the towns and are not afraid of bigger problems after the crisis termination. This might be connected with the mentioned question, what can be ascribed to the present crisis and what is not connected to it. Namely in the case of Slovakia, it seems that Slovak countryside is burdened by a considerably deeper and more long-term problems, than in the case of Czech countryside, in which some of the negative phenomena might have been caused by the present crisis. On the other hand, there exist regions which are even without the crisis heavily impacted, so that it is almost impossible to discern when their population is facing the national or international crisis and when it is not. Since Slovak towns lived through a certain stage of prosperity in the pre-crisis period, what contrasts sharply with the present situation, which is in many parameters similar to the pre-crisis situation of Slovak countryside, the comparison of the endangering of the towns and countryside by the crisis does not show any considerable differences.

An interesting problem pointed out by the experts from both countries is the agreement regarding the cohesion and cooperation of rural population and the stability of families in rural areas. The experts pointed out that the crisis influences social relationships in a negative way, owing to which the model of competitiveness begins to replace the traditionally perceived idea of countryside as the society of people abundant with non-formal and friendly relationships. Neither did the families escape the negative impact of the crisis, which is reflected namely in the decreasing stability and weakening cohesion.

The respondents of both countries also agreed on the perceiving of the countryside as a certain unique space, in which it is not possible to apply the identical approaches in solving the crisis as in the towns. The reviving processes which are included in the crisis from its basic character might not function in the environment where the question of choice [be it with regard to anything] cannot be considered at all, or only to a limited extent. And as the disappearance of the even so very limited number of possibilities for rural population is not only the phenomenon typical for the period of crisis, but which can occur even in pros-

perity, the respondents did not bring any original solutions even in this important period.

They just repeat the ideas known from the works of the renowned home and world authors interested in the problematic of the countryside: to support small and middle enterprises, to respect the rural space uniqueness [in the spatial as well as social and cultural sense], and above all to concentrate on the diversity of the individual activities, to utilise the environmental specifics of the region and other, to which also the authors of this article add their agreement, as only the aimed and long term support of the countryside, namely in the pre-crisis periods, can lead to its stability and sustainability, what represents the inseparable element of the healthy development of the whole society.

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14. Clusters development in terms of building competitive advantages of an agricultural sector in transition countries

14.1. Introduction

Clusters represent a specific and more sophisticated form of association/networking companies from business, scientific and educational institutions, governmental bodies and agencies in a particular field of activity in a particular geographic region. Clusters have a numerous of positive influences / contributions to the members involved and key contribution is in the field of building and promoting their sustainable competitive advantage. Clusters are not sufficiently developed in transition countries. One of the reasons is absence of confidence and interest for cooperation between business subjects, but much more dominant reason is underdevelopment of business environment and the absence of government stimulation measures in the direction of encouraging the development of SMEs and entrepreneurs.

Paper work[35] analyzed the development of clusters in transition countries, the possible contribution of clusters to improving competitiveness of the agricultural sector and points out the presumption which is necessary to be constructed in order that clusters in transition countries could be develop in the future.

14.2. Concept and basic characteristics of clusters

Clusters can be developed in all economies (more or less developed, large or small), in all fields of the economy (traditional, technologically advanced). They may occur at the level of small local firms, may be present in rural or urban areas. Today, many knowledge-intensive clusters are concentrated in certain

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regions of Europe, thanks to a cluster many European regions and countries developed their own competitive advantages. According to the Competitiveness Report of the World Economic Forum (WEF) 2011-2012 [The Global.. 2011], clusters are the most developed in countries such as Taiwan, Italy, Japan, Finland, Singapore, Hong Kong, Sweden, Switzerland, USA. Countries which are at bottom of the list of developed clusters are mainly from Africa.

Clusters are highly complex phenomenon that is not easily to define. Professor Porter defines clusters as geographic concentrations of interconnected companies and institutions in a particular field of activity (one area of business) or, even as a critical mass of companies and institutions at one place, unusual competitive success in particular fields of activity [Porter 1998]. According to Innobarometer 2006, clusters are groups of related companies, suppliers, service providers and associated institutions in a particular field of activity/business that are geographically close to each other [Infobarometr 2006]. The authors define a cluster as a group/network of related companies, scientific-educational institutions and governmental agencies in a particular field of activity/business and in a particular geographic region (city, district, and province).

Based on research of comprehensive world literature on clusters can be concluded that successful cluster association has the following characteristics [Infobarometr 2006]:

- Geographical vicinity of companies and institutions (critical mass concentration of firms and institutions in specific geographic area).
- Successful clusters are concentrated in one or more economic sectors within the region (cluster density), they have width (established horizontal connections with cluster participants) and depth (vertical connections of members in the cluster).
- Successful clusters are characterized by the existence of, so called „social adhesive" (developed confidence, cooperation and partnership among the companies, government bodies, scientific-educational institutions).
- Cooperation between the cluster members realizes through intensive cooperation, but also through competitive relation.

14.3. Cluster contribution to agrarian sector in transition countries

A key positive contribution of clusters, especially in sector of SEMs, is in domain of competitiveness growth of engaged members, which is a result of: [A Practical Guide.. 1998, Porter 1998]:

- Reduction of production costs and productivity growth (based on high production specialization, a presence of specialized suppliers, better approach to inputs and markets etc.),
- Increase innovation of companies which are involved in cluster (innovation is the result of effective exchange of ideas, information, knowledge);
- Stimulating entrepreneurship development, establishing new companies and increase of employment in the region in which the cluster function,
- Using the governmental programs: building and improving physical and information infrastructure, development of public institutions, technology transfer and construction of laboratories, construction of cargo logistic centers, organizing educational programs, organizing joint exhibitions within the export promotion, etc.

Clusters are especially important for building and strengthening the competitiveness of developing countries and countries in process of transition. These countries often lack the resources, knowledge and sophistication, and its competitiveness in the international market make on the basis of low production and export prices, low salaries, low cost of soil and exploitation of the rich and valuable natural resources (areas in which the country competitive in the international market are mostly farming, mining, energy, etc..). In these countries, the clusters are guideline, or way, or the comparative factor, how to achieve advantage (based on cheap land, cheap labor, cheap products) on competitive advantages, which are based on specialized knowledge, application of innovation, high productivity, developed business environment.

The contribution of clusters to increase of productivity and profitability of agricultural production. Although, the EU offer to transition countries the ability to export agricultural and food products to EU market, and possibility to using funds for agriculture. Results in the field of agriculture will depend on the success in improving two key determinants of competitiveness: productivity and quality [Miroslav et al. 2012]. In literature also points out that an important factor to improving agricultural production in all countries, especially in transition, is productivity growth and that this is more important factor than the growth of production [Liefert et al. 2002]. Productivity growth can only lead to the growth of income in the agricultural sector (precisely to the growth of the

standard of living of the rural population), especially in conditions of the liberalized market/trade. The productivity growth in transitional countries includes, not only a change of production technology, but something which is more important – the change of character and behavior of firms (their organization, management, motivation), creating commercial and public infrastructure and institutions for support (system of credits, provision of market information, legislative base etc.) [Liefert et al. 2002]. Exactly in this context recognizes the significant role of the cluster. Joining in clusters, participants have a possibility to „compensate" everything which miss to each of them individually, i.e. they have a possibility of mutual, more efficient and cheaper approach: to capital/finances, to specialized suppliers and labour, to market for products sale, to knowledge, to information and scientific acknowledgements, etc. Besides, the members of a cluster may use the government programs in the field of physical infrastructure construction, establishing public institutions, laboratories, transfer of technologies, educational programs etc.

14.4. Clusters development in the transition countries

Although clusters have indisputable significance for enhancing competitiveness, innovativeness and for a sector of agro-food products export, in literature on clusters points out that developing the competitive advantages of local communities/regions and producers through clusters in transitional economies has been complex and enduring activity, with uncertain outcome.

For the reason that nature and depth of clusters varies with the state of development of the economy and the level of development of the business environment, in all transition countries, the clusters have insufficiently been developed and „suffer" from a shortage of many supporting industries and institutions, specialized local infrastructure, educational program, underdeveloped social capital or poorly developed forms of association, etc. [Porter, Schwab 2008] The authors from the transitional countries emphasize that, although there is a strong need in those countries for clusters development, efforts and initiatives to establish new connections between farmers, communities and other participants in agricultural sector, like processing factories, companies which supply the farmers with inputs, etc., are still very inefficient [Bronisz, Wim Heijman 2008].

Differences among clusters between developed economies and developing countries (and the countries in transition, the authors' supplement) are regarding organizational networks, size, width and depth. In developed economies, the clusters are more developed, their width and depth are greater, there is a dense network of relations and connections among the members of a cluster, connec-

tion between the members constantly develop/improve, there is deeper and more specialized suppliers' base, the clusters comprise numerous related activities, significant auxiliary institutions etc. In the countries in transition and developing countries, the clusters are [Porter 1998: 232-236]:

- Of a local character and use intensively natural resources and labour (mostly are rest upon import components, services and technology),
- Shallow (including small number of participants, insufficient level of co-operation between the members),
- Many clusters have been hierarchically organized as networks in which centre are usually several big companies, government institutions or distributors.

Researches of the authors Ketels and Sölvell, in 2006, with topic on the clusters initiatives in ***developing countries and the countries in transition***, was pointed out to the following important conclusions [Ketels et al. 2006]:

- Economic policy is centralized on the national level and mainly there is insufficient political support to competitiveness and clusters development,
- From the social context point of view, there is mostly lack of trust, as between the companies, as well as between the companies and the government,
- Clusters initiatives mainly relate to products' value added increase and are mostly focused on basic industries,
- Donor clusters initiatives have an important role, as for distrust in economy, as well as due to insufficient activity of the state.

In the tables 1 and 2 was given the latest evaluation of the national competitiveness and clusters development by the World Economic Forum (WEF) [The Global.. 2011: 506].

Although the WEF in its latest report monitors 142 countries in the world, in this paper the analysis relates on 29 transitional countries, monitored by the EBRD in the Transition Report [EBRD 2011]. According to the presented tables can conclude that:

- The most developed clusters among the analyzed transitional countries have: Slovak Republic, Slovenia and Turkey. Those countries are in the first half of totally 142 countries in the world according to the clusters development, and these countries have started among the first with clusters development in their national economies,
- Underdeveloped clusters have the following countries: Kyrgyz Republic, Albania, Tajikistan, Moldova, which are at the end of the list of 142 countries according to the variable „State of cluster development".

Table 1. Transition countries ranked in Global Competitiveness Report 2011 - 2012 according to the indicator „State of cluster development“

Country[1]	Rank/142	State of cluster deveopment, mark, weighted average 2010-11/[2]
Slovak Republic	62	3.6
Slovenia	69	3.5
Turkey	70	3.5
Bosnia and Herzegovina	76	3.3
Azerbaijan	80	3.3
Estonia	84	3.3
Kazakhstan	85	3.3
Croatia	88	3.2
Russia	92	3.2
Latvia	94	3.1
Hungary	99	3.1
FYR Macedonia	101	3.0
Georgia	102	3.0
Bulgaria	104	3.0
Poland	106	3.0
Armenia	108	2.9
Lithuania	114	2.8
Romania	116	2.8
Montenegro	117	2.8
Ukraine	119	2.7
Mongolia	121	2.7
Serbia	128	2.5
Kyrgyz Republic	129	2.4
Albania	130	2.4
Tajikistan	131	2.4
Moldova	132	2.4

[1] Selection of the transitional countries was done according Transition Report, EBRD.

[2] Evaluation of clusters development was done according to answers of the companies' managers on the following question: In your country’s economy, how prevalent are well-developed and deep clusters? [1 = nonexistent; 7 = widespread in many fields?

Source: [The Global.. 2011: 506].

Table 2. Transition countries ranked in Global Comptititveness Report 2011-2012 according to the indicator Global Competitiveness Index

	The Global Competitiveness Index/GCI 2011–2012/[2]	
Country/[1]	Rank/142	Score
Estonia	33	4.62
Poland	41	4.46
Lithuania	44	4.41
Hungary	48	4.36
Azerbaijan	55	4.31
Slovenia	57	4.30
Turkey	59	4.28
Montenegro	60	4.27
Latvia	64	4.24
Russia	66	4.21
Slovak Republic	69	4.19
Kazakhstan	72	4.18
Bulgaria	74	4.16
Croatia	76	4.08
Romania	77	4.08
Albania	78	4.06
FYR Macedonia	79	4.05
Ukraine	82	4.00
Georgia	88	3.95
Armenia	92	3.89
Moldova	93	3.89
Serbia	95	3.88
Mongolia	96	3.86
Bosnia and Herzegovina	100	3.83
Tajikistan	105	3.77
Kyrgyz Republic	126	3.45

[1] Selection of the transitional countries was done according to the Transition Report, EBRD.
[2] GCI consists of 12 pillars of competitiveness and numerous variables. One of the variables for GCI evaluation is also "State of cluster development".
Source: [The Global.. 2011: 15].

According to the tables 1 and 2 can notice also the next:

- Disharmony or disparity of a rank which a country has in clusters development and a rank according the global competitiveness (GCI) are especially present in the following countries: Poland, Lithuania, Azerbaijan, Estonia, Hungary. Those are the countries with much higher rank according to the GCI in regard to the clusters development rank. At the same

time, Bosnia and Herzegovina has higher rank regarding the clusters development in regard to the national competitiveness rank.

- All transitional countries which have developed clusters (except Bosnia and Herzegovina) have instantaneously high rank towards the national competitiveness, too. For example, Slovak Republic, Slovenia and Turkey, the countries with the most developed clusters within the transitional countries, took their place in the first half of the countries according to the Global Competitiveness Index.
- The countries with the least developed clusters are, at the same time, low ranked according to the GCI. An exception is Albania, which has a gap between its rank, according to the clusters development and a rank, according to the GCI.

14.5. Assumptions of cluster development in transitional countries

Although the clusters development must start from a position that initiatives for clusters must come from the economic entities them selves (from more definite need for clusters and readiness for cooperation and team work), in transitional countries, the clusters development should be stimulated by the government, too. However, besides a declarative orientation of governments for the clusters development, there was given poor financial and logistic support to this type of association.

In governmental support to the clusters will be the most important activities for removing restrictions for development and SMEs increase. That is to say, crucial will be the government role in creating stimulating micro-economic business environment for establishment and business of SMEs, which encircle:

- Developed public institutions, as assumption for building trust, respect and safety of contracts, protection of proprietary rights, joint investments, etc.
- Stimulating investment and innovation policy.
- Stimulating tax policy and developed financial market and labour market.
- Developed policy of competition protection on the market (regulating a monopoly issue, companies with a dominant position on the market, etc.).
- Developed business infrastructure (a presence of business incubators, scientific-technological parks and similar)

A necessity for progress in building infrastructure, institutions and the total business environment has been followed by the EBRD [2011] in its transitional reports for many years behind. In the latest report of this institution is followed a progress in transition at the sectoral level and is pointed out that highest

scores are typically in the CEB countries (Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia), followed by SEE (South-eastern Europe) and Turkey. The lowest scores are in Central Asia (Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan, and Uzbekistan). At the sectoral level, the sector with the highest average score is telecommunications, while the least developed sector is private equity[36].

The EBRD still tracks the progress of the countries in transition via the transition indicators[37]: large scale privatization, small scale privatization, governance and enterprise restructuring, price liberalization, trade and foreign exchange system, competition policy. In 2011 the countries had shown the least progress in indicators Competition policy and Governance and enterprise restructuring. For several years, the EBRD has monitored developments in the implementation of anti-monopoly laws across the region, assisted by national competition authorities which have responded to a questionnaire and provided detailed information on their activities.

Besides previously mentioned, the clusters success will depend also on entrepreneurial initiatives of economic entities (agricultural producers) in direction of greater associations, networking, trust building and organizing joint activities, as well as the support which the clusters get from the institutions for support/cooperation. For the clusters development, of utmost importance are activities of the institutions for support/cooperation (Business Support Organizations or Business Service Providers), which help SMEs in a cluster to increase its competitiveness on the national and international market (through technical, consulting, financial and other support).

14.6. Conclusions

Although clusters have long been an essential element of business infrastructure and a source of competitive advantage of companies and national economies, they are still unsuccessful attempts at building and improving competitiveness in transition countries. Numerous initiatives are present by government bodies and agencies donors, but their thoroughly and essential function is still far from the true concept of clusters and the limited with lot of problems.

[36] Sectoral level involves examining 16 sectors in four categories, covering the corporate, energy, infrastructure and financial areas, in each country [EBRD 2011: 8-12].

[37] The transition indicators range from 1 to 4+, with 1 representing little or no change from a rigid centrally planned economy and 4+ representing the standards of an industrialised market economy. [EBRD 2011: 13-15].

In following period, the governments of transition countries have to choose how they will build the competitiveness of local companies and business. This obligation is particularly great in the field of agro-economy, given the fact that the agribusiness sector in transition countries has a large factor, trades and other advantages in the international market. Cluster approach directing the national economy and its activity is just one of the ways how to strengthen the competitiveness of domestic producers, and the choice of this approach is predominantly committed with political will to make changes.

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15. Sustainability of individual farms based on farm accountancy data and survey of respondents from Wielkopolskie Voivodeship

15.1. Essence of sustainable development

The issue of sustainable development has not been clearly defined[38]. Under Polish law, sustainable development means socio-economic development with the process of integrating political, economic and social activities while maintaining sustainability of the environment and natural processes. The aim of this process is to ensure the possibility of meeting the basic needs of communities or citizens of both contemporary and future generations [Dz. U. 2001, No. 62, item 627, article 3]. The concept of sustainable development includes activities related to economic growth, multi-sectoral policy, food security, as well as finding global solutions to environmental problems, which is justified by moral duty and responsibility for the state of the global ecosystem [Baker 2006: 146-148].

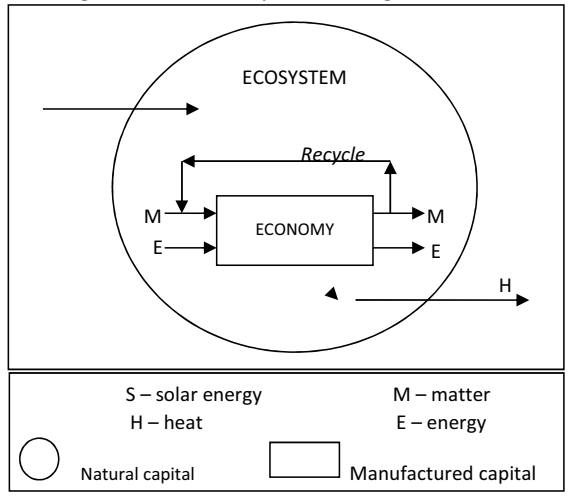
Sustainable development focuses on the role of the global ecosystem – the natural capital that provides a wide range of irreplaceable resources and environmental services necessary for human existence. On one hand, the global ecosystem is the source of all material factors of the economic subsystem, on the other it is a place to which waste produced as a result of business activities is returning. Natural capital resources and regenerative functions have great but limited capacities to absorb anthropogenic emissions.

In case of excessive exploitation of the ecosystem and the growing threat of deforming geochemical processes of the biosphere, the shift of socio-economic development to a sustainable direction became necessary [Zegar, Wilk 2007: 9]. Currently, the negative externalities of economic activity are beyond the absorption capacity of the ecosystem, which is a strong argument for the change. Any economic activity is consumption of natural resources, which reinforces the validity of the implementation of sustainable development principles [Rees, Wackernagel 1994: 369]. In this light, the protection of natural capital should be an urgent priority for the community [Prugh et al. 1999].

[38] The term *sustainability* comes from ecology and refers to the resilience of the ecosystem [Reboratti 1999: 207-222].

The idea of sustainable development has the theoretical foundation in **ecological economics** (Figure 1). Ecological economics assumes that economic system can develop only under the environmental system, as the global ecosystem (the biosphere) has its natural limits [Zegar 2007: 52, 77-78; Zegar 2012: 21][39]. Interest of the proponents of this thinking is centred around the issue of protection of natural resources, including the designation of *environmental safety threshold*. The rationale of the presented approach is the more and more limited efficiency of the material capital – manufactured capital, due to the decreasing supply of complementary natural resources.

Figure 1. The economy as an open subsystem of global ecosystem in the light of the theory of ecological economics



Source: [Prugh et al. 1999: 20].

15.2. Sustainability of agriculture and farms

Sustainable development recognizes the national economy as a whole, including all its sectors. It is of particular importance for agriculture, as the system of agricultural production (including technology of production) affects the quality of the main agricultural products, which are food and its safety. The agricultural sector is the main user of the limited resources of the earth, and thus the physical space. It also has indirect impact on the environment, in particular on

[39] Such approach was initiated by Kenneth Boulding in 1960s; he compared the Earth to a spaceship with fixed amount of resources, energy and capacity to absorb pollution [Boulding 1970].

the agrochemical state and physical properties of soil, as well as water and air quality[40]. Therefore, the assessment of the agricultural economy must take into account environmental, social and economic issues.

- ✓ The environmental aspect of sustainable agriculture focuses on the use of public goods that allow their self-renewal. The importance of this issue is due to excessive exploitation of natural resources, which is considered the most serious problem of the twenty-first century. Progressive degradation of the natural environment has shown that, in the future, the major limitation in the functioning of societies will be natural resources, rather than the basic factors of production technologies. The changes have forced environmental initiatives, both global and local, in each of economic activities [Czartoszewski 2003: 47; van Loon et al. 2005: 52].
- ✓ The social aspect of sustainable agriculture relates to satisfying the food needs of society, as well as concern for the cultural heritage of rural areas. Thus it takes into account the commitment of every person in agriculture, either directly – as is the case of agricultural producers, or indirectly, which relates to food consumers. An important issue is the sense of responsibility for the common natural environment, which should be shared by every agricultural producer[41]. It is determined by the level of environmental awareness[42] and expectations of consumers for safe healthy food of high quality. The social aspect also includes the level (standard) of living of society, which defines social welfare, and even socio-economic welfare [Borys 1999: 20].
- ✓ The economic aspect of sustainable agriculture often is associated with a certain level of economic benefits generated by the agricultural sector. The main indicator that is used to monitor the economy is the Gross Domestic Product. This indicator, like the Gross National Product, is part of the National Accounts, but they do not include the value of natural capital [Repetto, 1992: 96; Prugh et al. 1999: 78]. These figures ignore the

[40] Agriculture has been identified as strongly affecting the state of natural capital [Prugh et al. 1999: 74].

[41] These issues were discussed in the publication [Hałas, Rumianowska 2007: 82-92]. As indicated in [Griffin 1998: 151-154], this attitude can be very varied, ranging from resistance to social responsibility (avoiding liability for unacceptable actions) to social obligation (acceptance and respect for the law), reaction (except for the fulfilment of legal and ethical obligations, taking voluntary action for society), and even social contribution (search for possible inclusion to achieve social objectives).

[42] Development of environmental awareness is a complex process, which varies depending on the degree of social acceptance, as well as the level of deepening the knowledge about the ecological consequences of action in relation to the environment [Żemigała 2007: 139].

value of externalities whose valuation in monetary value causes great difficulties [van Loon et al. 2005: 31].

Since the early 1990s there were changes made in the Common Agricultural Policy (CAP), which are reflected in the reforms taking into account environmental requirements in agricultural production. The implementation of good agricultural practices, meeting the minimum requirements of the protection of the environment, cross-compliance rules or minimum standards for agricultural production has become mandatory for farmers interested in raising additional funds under the CAP instruments. A comprehensive approach, including both market goods and public goods, highlighted the importance of multifunctional development of agriculture.

Conditional funding of agriculture highlighted the crucial role of farms in the shaping of the natural environment. Adopted policies, relevant legislation, the growing importance of protecting natural resources and a growing environmental awareness led to the need to monitor the extent of the impact of agricultural production on the natural environment at the global, national and local levels. The search began for interpretable measures and appropriate research methods, allowing for synthetic evaluation of agricultural sustainability, including internal organization (relationship of plant and animal production) and relationship with the environment [Runowski 2000: 94-102].

15.3. Purpose of the article, the subject and the method of research[43]

This article aims to provide the level of environmental and economic sustainability of individual farms, as well as recognition of farmers' opinion on selected issues of sustainable development.

The subject of the study were individual farms covered by agricultural accounting system within the Polish FADN (Farm Accountancy Data Network) in 2008. The population was 11 283 farms. The study selected entities with the following agricultural types: specialized in field crops (type 1), specialized in the breeding of grazing livestock (type 4), specialized in breeding of granivores (type 5), non-specialized with mixed crops (type 6), non-specialized with mixed livestock (type 7), non-specialized with mixed crops and livestock (type 8).
FADN data resources were supplemented by the opinions of 110 farmers from Wielkopolskie Voivodeship (purposeful selection), using the technique of directed interview. The specificity of the region – high level of agriculture – determined its selection for the study. Interviews with farmers were conducted in 2010.

[43] Research method is presented in detail in [Wrzaszcz 2012].

For the purpose of measuring the level of farms sustainability, there were selected criteria (justified in terms of content and statistics) and the method of analysis which enables synthetic evaluation of the phenomenon on the basis of FADN data. It was assumed that sustainable farms have certain threshold values for selected criteria for assessing sustainability [Zegar 2005: 10]. To determine the sustainability of farms, there were selected the variables that reflect both positive as well as negative agricultural practices. Selected indicators and measures were assessed against the most desirable values, resulting from the principles of agricultural production organization and legal standards. The approach used – taking into account the point of reference in the evaluation of the phenomenon, allowed a clear assessment whether the farm is more or less sustainable.

Selected diagnostic variables were normalized by the method of zeroed unitarization with reference boundary system (for example, formula 1 is given for the normalization of stimulant variable with veto threshold), and then subjected to aggregation [Strahl, Walesiak 1997: 69-77]. The advantage of the method was the possibility of designating the so-called threshold indicator value, which was a point of reference for standard assessing of sustainability. Environmental sustainability index was defined as the average value of six standardized diagnostic variables (formula 2).

Formula 1.
$$z_{ij} = \begin{cases} \dfrac{x_{ij} - \min\limits_{i}\{x_{ij}\}}{\max\limits_{i}\{x_{ij}\} - \min\limits_{i}\{x_{ij}\}} & dla\ x_{ij} \geq \mathrm{x}_{\mathrm{oj}}^{\mathrm{S_m}} \\ \dfrac{x_{ij} - \max\limits_{i}\{x_{ij}\}}{\max\limits_{i}\{x_{ij}\} - \min\limits_{i}\{x_{ij}\}} & dla\ x_{ij} < \mathrm{x}_{\mathrm{oj}}^{\mathrm{S_m}} \end{cases}$$

Formula 2.
$$z_i^{ś} = \frac{1}{m}\sum_{j=1}^{m} z_{ij}$$

Symbols:

i – the number of objects , $i = 1,2, \ldots , n$; where $n = 11\ 283$;

j – the number of diagnostic variables (sustainability criteria), $j = 1, 2, \ldots m$;

x_{ij} – the value of j variable of i object;

$\min\{\mathrm{x}_{ij}\}$ – the minimum value x_{ij};

$\max\{\mathrm{x}_{ij}\}$ – the maximum value x_{ij};

z_{ij} – the normalized value of j variable of i object; $\mathrm{z}_{ij} \in [-1;1]$;

$z_i^{ś}$ – the sustainability level of i object (agricultural holding);

$\mathrm{x}_{\mathrm{oj}}^{\mathrm{S_m}}$ – the veto threshold for j diagnostic variable.

Environmental sustainability criteria for farms were:
✓ number of groups of plants cultivated on arable land – stimulant, veto threshold: 3;
✓ index of vegetation cover on arable land during winter – stimulant, veto threshold: 33%;
✓ share of cereals in the crop structure of arable land – destimulant, veto threshold: 66%;
✓ stocking density on agricultural land – destimulant, veto threshold: 2 LU/ha;
✓ balance of soil organic matter – stimulant, veto threshold: 0;
✓ gross balance of nitrogen in soil – nominant, regionally diverse veto range [Wrzaszcz 2009: 24-42].

Synthetic measure used to **assess the economic situation** of the family farm is the level of family farm income. The value of income is the economic result of decisions made by the farmer, and thus a measurable outcome of agricultural activity. The economic situation is considered to be sustainable when the income from the agricultural business allows the farmer to provide for maintenance his family and to develop the farm. In other words, the economic result should cover payment for farm work at the level of average wage in the national economy, as well as provide an opportunity to modernize the farm [Krasowicz et al. 2007: 57-58]. Therefore, to assess the economic sustainability, there was used the indicator for the relationship of payment for farm work (family farm income per family work unit) and the average annual net salary of employees in the national economy. The desired level of the indicator was at least the parity relationship of wages (type of variable – stimulant, veto threshold: PLN 23 628/FWU)[44].

Determination of the **level of farms sustainability in environmental and economic aspect** was deemed justified only in units characterized by a minimum threshold value of index in both studied aspects. In other case, the relative economic advantage could mitigate the relatively low level of environmental sustainability (or *vice versa*), and the result of the synthetic measure would take similar values in different farms. Level of sustainability was calculated as the average value of environmental and economic indicators[45].

[44] After [Skarżyńska 2009: 19]: average pay for 1 hour of work in 2008 – PLN 10.74. Assuming the normative annual labour input of 2200 hours, the parity family farm income per family work unit (FWU) was PLN 23 628.

[45] Sustainability areas did not include the social aspect. FADN data provide for a multifaceted production and economic analysis of farms, but they do not include social features of farming families. To supplement this information, a interview was made with selected group of farmers. This study enabled partial assessment of the social aspect, as well as wider recognition of pro-environmental practices and economic situation of farms.

15.4. Level of sustainability of individual farms

Farms were classified according to the values of environmental and economic sustainability.

In terms of the impact of agricultural production on the environment, there were isolated farms with high (satisfactory) level of sustainability (they accounted for 22%, and agricultural practices in these units were assessed as environmentally friendly in the light of the adopted criteria), with an average score (39%, agricultural production in these entities violated environmental sustainability, but generated positive externalities exceeded negative externalities at the level of farms), and characterized by low and very low value of the index (33% and 6% – in this case incorrect agricultural practices outweighed appropriate, resulting in a significant violation of natural resources).

Table 1. Selected characteristics of agricultural holdings differ in the level of sustainability

No.	Specification	FADN	EN		EC		ENEC
			EN_H	O	EC_H	O	
1	The number of holdings	11 283	2520	8763	5201	6082	1422
2	Agricultural land (ha/holding)	35.45	39.92	34.16	52.00	21.29	53.00
3	Soil quality (points)	0.85	0.90	0.79	0.89	0.81	0.95
4	Total labour input (Annual Work Unit: AWU/holding)	1.94	2.03	1.91	2.13	1.77	2.16
5	Farmers with agricultural education (%)	58.43	61.11	57.66	65.47	52.42	65.96
6	Total assets (thous.PLN/holding)	591.87	692.08	563.06	852.86	368.69	918.45
7	Gross Margin (thous.PLN/ha)	2.41	2.59	2.36	2.80	1.62	2.87
8	Economic size (European Size Unit/holding)	20.46	21.74	20.09	30.85	11.58	29.34
9	Labour productivity (thous.PLN/AWU)	93.77	95.46	93.25	137.68	48.45	127.68
10	Land productivity (thous.PLN/ha)	5.12	4.86	5.21	5.65	4.02	5.20
11	The relation of total output and input (PLN/PLN)	0.84	0.80	0.85	0.78	0.98	0.75
12	Farm Net Value Added (thous.PLN/ha)	1.94	2.13	1.88	2.42	0.94	2.47
13	Family Farm Income (thous.PLN/Family Work Unit)	35.20	41.78	29.25	64.30	9.31	64.92
14	Family Farm Income (thous.PLN/ha)	1.69	1.87	1.64	2.15	0.73	2.20

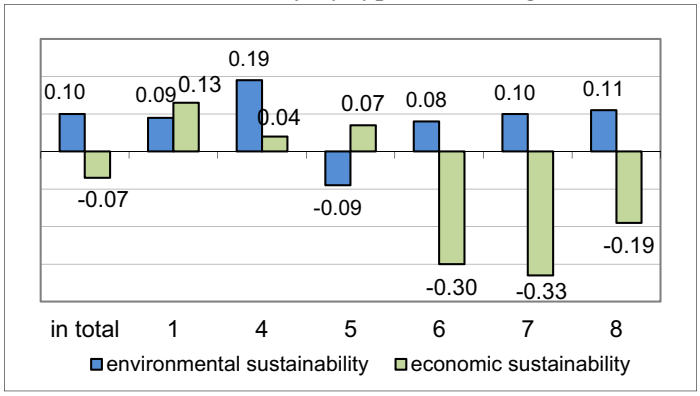
* High/satisfying (H) level of environmental (EN), economic (EC), environmental and economic sustainability (ENEC); O – others agricultural holdings.

Source: [Own study based on FADN data].

Depending on the economic sustainability of farm, there were distinguished units with high level of sustainability (46% of the farms were characterized by at least parity relation of family farm income per family work unit), average (22%, revenue ratio ranged from 0.50 to 0.99) and low (25%, revenue ration did not exceed 0.49), as well as entities with negative results (7%).

In the population of surveyed farms, 13% of the units were found to be sustainable in both aspects, because at the same time they were characterized by high values of environmental and economic indicators. Agricultural production in these entities did not generate threats to the natural environment, and their economic result was comparable to the income in other sectors of national economy.

Figure 2. The average level of environmental (EN) and economic (EC) sustainability by type of farming*



* Type of farming: 1 – specialist field crops, 4 – specialist grazing livestock, 5 – specialist granivores, 6 – non-specialised – mixed crops, 7 – non-specialised – mixed livestock, 8 – non-specialised – various crops and livestock.

The calculated indicators of sustainability were statistically verified by application of parametric ANOVA test and non-parametric Kruskal-Wallis test.

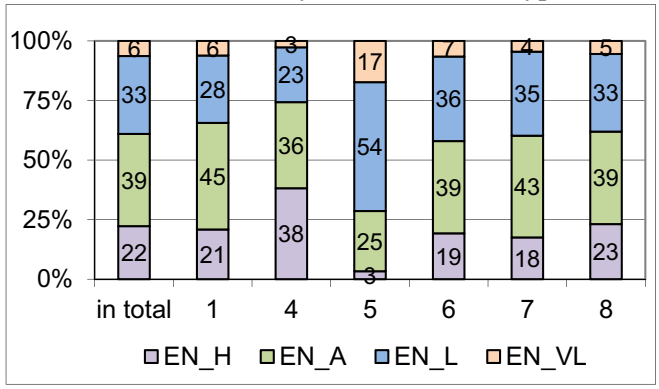
Source: [Own study based on FADN data].

Farms with a satisfactory level of environmental, economic, and environmental-economic sustainability had much greater production potential and more favourable production and economic results as compared to other (Table 1). Cost and income indicators pointed to a better organization of agricultural production, as well as higher efficiency in highly sustainable units as compared to other entities.

An important factor differentiating the level of sustainability of farms was their type of farming (Figure 2, Figure 3). In environmental terms, the contrasting types of farms were units specialized in the breeding of grazing livestock – type 4 (characterized by the highest value of the index and 38% farms of

this type was highly sustainable) and specialized in breeding of granivores – type 5 (only 3%). In the economic terms, specialized entities were placed much higher (the parity result distinguished 59% of type 1 units and 55% of type 4 and 56% of type 5) than non-specialized farms (only 30% of type 6, 28% of type 7 and 38% of type 8).

Figure 3. The structure of agricultural holdings by the level of environmental sustainability – in total and in types of farming*



* Type of farming, see Figure 2.
High (H), average (A), low (L), very low (VL) level of environmental sustainability (EN).
Source: [Own study based on FADN data].

15.5. Attitudes of farmers towards selected sustainability issues

Interview questionnaire enabled identification of farmers attitudes from Wielkopolskie voivodeship to:
a) the need for the implementation of agri-environmental practices,
b) ensuring viability of farms,
c) improvement of own qualifications,
d) assessment of the economic situation in agriculture.

In order to identify **attitudes of farmers towards agri-environmental issues**, there was prepared a range of questions allowing for verification of mandatory agricultural practices defined in the legislation, but also such activities, which are not mandatory, but are substantively justified, namely:

- ✓ related to good agricultural condition,
- ✓ cross-compliance requirements for plant health,
- ✓ fertilizer practices included, among others in the cross-compliance rules concerning the protection of waters against pollution caused by nitrates from agricultural sources.

On the basis of the declaration of the respondents it was stated that the practices associated with good agricultural condition, as well as cross-compliance requirements in the field of plant health, had been performed correctly. There were respected principles of crop rotation, prohibition of land burning and registration of plant protection practices. Plant protection products were properly used – in a manner that minimizes risk to the environment. However, agricultural practices concerning fertilization of crops often posed a threat to the natural environment. The major problem was the rare frequency of testing soil composition and reaction (on average every 6.4 years), thus infrequent preparation of fertilization plans (only every third respondents had such a document), and infrequent application of lime fertilizers (on average a parcels was fertilized every 8.5 year). Natural fertilizers were used in optimal period (between March and November), but in every four farm they were not properly stored.

The results of testing soil composition and pH, and preparation of fertilization plans allow for the rationalization of fertilizing crops both in the field of environment and production, as well as economically. With such documents, the agricultural producer on the one hand increases the efficiency of fertilization of crops, on the other reduces the costs associated with the purchase of means of production. Given the relatively low cost of soil testing in comparison to other items in the costs, we can say that non-economic reasons, such as lack of a suitable knowledge, determine omissions of agricultural producers in this regard. Unfortunately, farmers who are not legally obliged to perform soil tests much less often take their own initiative in this area[46].

An important part of the fertilizers management is the proper application of lime fertilizers. Taking into account the fact that most soils in Poland are light soils, it can be assumed that they should be limed every 3-4 years in the amount of 1-1.5 tons of CaO/ha [Hołubowicz-Kliza 2006: 33]. The results showed that 56% of farmers used lime fertilizers every 4 years or more often, 27% of farmers every 5 years, and 17% even less often. In economically stronger farms, lime fertilizers were used more often, as opposed to the weakest. The average amount of fertilizer applied was 8.5 dt of CaO/ha. Fertilizers practices in this area were found to be inadequate to the needs – i.e. the acidification of soil and nutrient requirements of crops.

In accordance with applicable laws, tanks for liquid manure should be in all farms with livestock production, while manure pads only in farms located in the so called *vulnerable zones*, as well as those with a high volume of animal production [www.minrol.gov.pl]. Research shows that 77% of farms had an ad-

[46] Results for agri-environmental practices in the surveyed farms are presented in detail in [Wrzaszcz 2012a].

equate technical infrastructure to ensure environmentally safe storage of natural fertilizers. Economically bigger farms were more likely to be equipped with pads and tanks for the storage of manure. Among small farms, the number of adjusted and unadjusted farms, in terms of the analyzed equipment, was almost evenly distributed. The rationale of the results is the high cost of such investments, which will undoubtedly limit agricultural producers' decisions, especially owners of small farms.

The questionnaire interview also collected the **opinions of the respondents on viability of farms**, as well as the perceived needs related to **enhancing professional qualifications**.

A significant proportion of respondents did not see development opportunities for their farms (every third respondent pointed to this answer). Despite this, almost all declared willingness to stay in rural areas. Farmers presented a number of non-material reasons to justify the approval of life in rural areas, indicating the advantages of this style of life. Viability of rural areas is largely determined by economic incentives (ability of maintenance of farm family and earned income from agricultural or non-agricultural activities), rather than social factors, which was indicated by strong interest of the respondents and the declaration of living in the countryside. Farmers do not want to leave and change their places of residence, but they must be able to conduct a profitable business, at least allowing subsistence. Respondents associate the future of their children with agriculture, and their expectations in this area increase with economic potential of farms, which is justified by rational considerations.

In addition to the planned investment activities on the farm, the respondents saw the need to improve their qualifications, mainly in the form of participation in training courses. Managers of smaller farms, in particular, showed great interest in various forms of training. The substantive scope they were interested in was very broad and extended beyond the subject of agriculture. A significant portion of the respondents expressed the desire to expand their knowledge in the field of environmental protection. This result was considered very favourable in light of the growing importance of sustainable and multifunctional development of agriculture and rural areas.

The last part of the study concerned the economic aspect. Farmers **evaluated the economic situation** through the prism of possibilities of finance needs related to households and farms, as well as subjective indicators of *decent standard of living*.

Most of the farmers declared that the income derived from agricultural activities provides finance for the current needs of the family and the education of children, but investments were considered problematic. Higher economic poten-

tial of farms guaranteed meeting family needs more broadly. Particularly disturbing was the economic situation in small and very small units, i.e. up to 8 ESU, because in every four such farm there were problems in financing the current needs of the family. Slightly better situation was in the units of about 8-16 ESU, but in this case they also had a problem with financial resources needed for investment. The results showed that revenues derived from average size farm provide farming families with existence, but in short term. Given the inability to enlarge the area of farms, as well as taking other costly investments (including the purchase of agricultural machinery, buildings modernisation), the scenario of further development of this entities – up to 16 ESU – is not optimistic.

Respondents gave their views on the viability of farming in relation to other sectors of the economy. Only 10% of respondents expressed a favourable assessment of agricultural activities. Presented opinions, however, were not confirmed in non-agricultural activities of the respondents. Reasons for this may be due to lack of skills, initiative and the opportunity to take such a job in the local market. Frequently managers of small farms (up to 8 ESU) had an interest in additional activities, mainly in the provision of services using their own agricultural equipment, as well as farm tourism. Given the unfavourable economic situation of these units and the greater availability of their managers, taking additional activity, thus supplementing the family budget by an additional source of income, is rational.

Respondents evaluated the level of family farm income. A positive rating was given by nearly half of the respondents, and was more often given by the managers of larger farms. Owners of smaller units often identified their assessment with the satisfaction of the current needs, changes in home furnishing and provision of education for children, while farmers with large farms reduced their expectations to investments (purchase of farm equipment and land, modernization of buildings). Particular attention was paid to the answers given by the heads of the smallest farms – up to 8 ESU, as they mostly identified positive assessment with the ability to meet the basic needs of the family and provide education for children, but none of the farmers with farm of more than 40 ESU have indicated such answers. Based on the results, it was found that the expectations of the respondents as regards the family farm income are diverse and depend on the size of their farms.

The concept of a *decent standard of living* was interpreted differently by respondents, but was essentially of economic nature. Frequently it was identified with the provision of independent existence – the ability to finance basic daily needs of the family. Every third respondent held that family farm income allow

providing a decent standard of living. Positive assessment was expressed much more often by managers of farms with higher economic potential.

15.6. Summary

Reflections in specialized literature on the measurement of sustainability of farms indicate a lack of universal (scientific) approach to this issue. Researchers' proposals result *inter alia,* from different purposes of research, different data resources, and subjective evaluation of measures and statistical methods. This discussion does not diminish the role of previous studies, but urges to make further attempts, aiming at reaching a compromise between the desire to fully assess the phenomenon and the ability to use reliable and representative data resources. Approach presented in this paper on the measurement of sustainability of farms should be regarded as an author`s proposal, which includes selected issues relevant in terms of content, as well as verifiable on the basis of available agricultural accounting data.

The results confirmed the dual development of agriculture, according to which in some farms the adopted production methods provide for high economic efficiency while respecting only the basic requirements of environmental protection, while in others agricultural production is more friendly to the ecosystem.
The studies have shown that it is possible to simultaneously achieve environmental and economic objectives at the farm level. It was found that identification of environmentally safe production with subsistence production and low profits is unjustified. The high level of labour profitability is possible through the implementation of both the pro-environmental practices, as well as those that generate threats to the ecosystem. Farms placed between these two extremes will be crucial in the development of natural resources.

The survey questionnaire shows that the scope of regulation is important in shaping the attitudes of respondents towards the implementation of pro-environmental farming practices. Legal instruments thus shape public environmental awareness and social responsibility. It was found that managers of larger farms care more about respect for the natural environment.

The results point to the purposefulness of activation of institutional factor, particularly in relation to the dominant group of farms that generate threats to the natural environment. Appropriate instruments should be the compensation of lost economic benefits, incentive to make changes in agricultural production, pay for public goods delivered, and force to comply with *the polluter pays principle*.

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16. Development factors and elements of a farm management system in France

16.1. Introduction

If a farmer wants to maintain and develop his activity in the short, but also medium and long-term perspective he has to tackle a complex environment implying a need to face the ongoing changes. Such circumstances force the need to take decisions, which prepare the farmer for the future. In this context the farmer more and more often comes in contact with the business logic, and hence he should have at his disposal a wide range of differentiated skills and tools, which will help him to pursue his profession and become a fully-fledged manger of a farm.

16.2. Farm management development in France

Farm management is an efficient tool for farm development supported with advisory services. The history of management development reaches back to the mid-1950s, when the foundations for the future Common Agricultural Policy were laid that origin from the Rome Treaty. It should be noted that the CAP aimed and still aims at achieving five priority objectives:

- to increase agricultural productivity by promoting technical progress,
- to ensure a fair standard of living for the agricultural community,
- to stabilise markets,
- to secure availability of supplies,
- to provide consumers with food at reasonable prices.

Thus CAP was a turning point – it assumed that given the new developing markets it is necessary to produce more at reasonable prices. It was the starting

point for the new stage of farm development as farmers expressed a wish to understand the essence of how their farms work. They tried to define the strengths, but also weaknesses of their farms in order to identify the areas for improvement and manner of introducing changes. This brave, theoretical approach required them to ask themselves a question: "Are we good in what we do?" To give an answer thereto certain output data were required, such as:

- productivity of production,
- total turnover on a farm,
- operating costs,
- margin obtained on the farm and in individual production activities,
- earned income, etc.

This were output data, which were used to compare individual activities between each other, thereby enabling efficient use of the capital owned. Next, there emerged a need to compare the results of activity combined with external help to analyse and interpret the results. This gave rise to the profession of a business consultant - an advisor that could provide a critical assessment of the situation of the farm. The farmers started to feel the need for technical and economic advisory. Consequently, agricultural accounting was developed, which constituted a valuable source of technical and economic information, forming the grounds for economic decision-making. It was then that the adventure started with farm management under the services provided by the French Chamber of Agriculture [*Chambre d'Agriculture*]. As a result of these transformations there appeared a form of accounts run exclusively for the needs of farm management. These were the first attempts at management accounting in agriculture.

On the basis of data obtained from management accounting the advisor may identify the strengths of a farm as well as areas requiring improvement. Such information enables also the farmer to analyse his own situation and improve the process of taking everyday decisions pertaining to both individual production activities, as well as more global dimension of farm management and making financial and strategic choices by the farmer. To put it shortly, it is all about „checking whether what we do is something that needs to be done". Results coming from comparative analyses of individual activities contributed to group analyses, i.e. comparison of groups of farms classified according to different categories, e.g. production volume, production trend, etc. Group analyses make it possible to support the recognition of the strengths and areas requiring improvement in relation to farms subject to comparison. They have the "mirror effect", which often causes reactions provoking the framers to ask the right questions to understand the causes of certain differences or discrepancies be-

tween the compared farms. The group analyses aim at creating model farms acting as the point of reference for the analysed farms, so as to keep the positive trend of improvement or continuous development of a farm, which is demonstrated in the technical and economic analysis completed with a financial analysis. It a virtuous circle which follows the dynamics of the following type: Observation >> diagnosis >> analysis >> strengths, areas requiring improvement >> actions to be implemented >> result of the measurement.

16.3. Tools applied in farm management

The following tools are applied to farm management:

- Profit and loss account – it presents the production and income results of a farm. It aims at eliminating shortcomings and implementing solutions to improve the technical, production and economic conditions of a farm.
- Balance sheet and cash flow statement are financial analysis tools, which make it possible to check the financial standing, prevent threats and better think over the remedies. The balance sheet provides information on the assets of the farm, level of debt and net financial position. The criterion of financial standing of a farm is of key importance in analyses of farms. This criterion refers to the working capital, which is deemed as the key cash flow indicator of a company also referred to as the enterprise sensitivity indicator.
- Cash flow statement allows for checking whether the proceeds are higher than expenditures in a farm.

The presented tools help to understand the economic and financial standing of a farm, and hence they are a valuable help in the decision-making process. With such a tool base and with the help of a advisor a farmer may introduce a technical, economic and financial control system on his farm. Initially this concept had been implemented with the participation of a small number of farmers and on a basic level, namely keeping accounts on a voluntary basis. This was a period when there were no specific administrative obligations, there was no statutory requirement to keep accounts.

Starting from 1975-1977 accountancy became obligatory for groups of holdings achieving turnover above a statutorily defined level. Thus accountancy was used for fiscal purposes. This evolution in the direction of “a tax on income from agricultural activity” based on actual results was the driving force behind the development of financial and management accounting in France. At present, most of “commercial farms” in France keep obligatory accounts and use it - af-

ter introducing some adjustments - to control the pursued activity. The changing economic conditions, going in the direction of greater fluctuation of revenue and thus – income, require a more precise method of farm management, especially under the conditions of increased risk as evidenced by the last years. It should also be emphasised that changes in the Common Agricultural Policy (CAP) reinforce the trend since the farms have to adapt to the market demands all the time, what is more, farms have to be more and more market oriented.

16.4. The impact of taxation on farm management

Before the introduction of the obligation to keep accounts the tax on agricultural incomes was established on the basis of flat-rate income. This implied that the most productive farms were treated in a preferential manner, whereas less productive ones were in unfavourable situation. But, in general, flat-rate taxation was a beneficial solution and many people agreed with the old saying: "To live happily, live in hiding".

The entering into force of an obligation to keep accounts aimed at tackling certain forms of injustice within the scope of income taxation system. Changes in agriculture taxation were perceived, at that time, as a real revolution: it was necessary to start keeping accounts usually with the help of an external person, thus revealing one's income to third persons. A real cultural revolution has been started – one had to open up and reveal certain facts about one's life. New terms in the everyday life language of farmers appeared. This was the driving force behind the understanding of the farm workings, which brought about an actual educational value. But in order to support agricultural activity, a separate fiscal system for farms has been introduced. It classifies results as „agricultural profits". These results are, at the same time, a rightful category of agricultural income calculated given the specific provisions. Of course, at the beginning, these changes were rather difficult. The farmers had to learn how to manage documentation and classify it: invoices, payments methods, they had to set up a bank account. There appeared additional costs following from the obligation to run accounts, apart the costs of taxation, which in many cases increased. Today the tax on agriculture "has became a permanent practice" and is more and more closely related with the issue of farm management. The greater part of "commercial" farms is subject to a tax system compliant with the personal income tax system mode, i.e. progressive system, as for all other tax payers. The system covering corporate income tax is rarely used in agriculture, but it has been de-

veloping over the recent years. Farms start to resemble actual enterprises with their structure and hence they take on the rules of operation of these enterprises.

At present, the greatest problem is posed by a question on how to adapt the taxation rules in agriculture to rapid changes in the agricultural sector, e.g. price and turnover variability. It has been commonly accepted that a tax should serve the company management, and it should not be a punishment. The taxation system should enable development to enterprises and their survival on the market. Now there are many instruments aiming in this direction, but they have to be flexible and introduce revolutionary changes.

16.5. Financing economic consultancy in the French agriculture

Along with the development of agricultural advisory (economic advisory in agriculture) the costs of its operation were partly covered by the State through the support granted to the Agricultural Chambers. Gradually, State aid was reduced, while economic advisory became more and more popular. State aid is still provided to support young farmers in the first years of their operation.

Today the economic model of economic advisory for farms is independent. The majority of "commercial farms" keep obligatory accounts complete with elements of management accounting, depending on the selected type of agreement. The demand for management accounting is the greatest when the framer starts-up activity, during the first years of activity and in the development phase.

As it has already been emphasised agricultural support and advisory were implemented under the Agricultural Chambers. Along with their development, independent structures took on the advisory activity and continued actions within the framework of non-profit associations under the watchful eye of professional managers and founding members. These associations referred to as "Agricultural Economics Centres" [*Centres d'Economie Rurale*] are administered by a management board selected from among its members – farmers, under the guidance of one of them. The Chairperson delegates the issue of operational management to the managing director, who manages the association as if it was a capital company. Each Agricultural Economics Centre [*Centre d'Economie Rurale*] has at its disposal an offer of services presented in the form of a set of services corresponding to individual needs of their customers. Thus a customer may create a "menu" adequate to his needs. Apart from accountancy services, the customer may ask for an advice in the field of management, strategic advisory, legal and tax issues, or advice pertaining to social insurance, assets manage-

ment or environmental protection. At the same time, the customers may benefit from the economic references.

16.6. Conclusions

It follows from the review that management in farms with the application of accounting is an evolutionary process. Accounting is continually improved and adjusted to the needs of the changing environment in agriculture. It not only has fiscal significance, but it is also one of the basic tools facilitating decision-making processes on a farm.

The activities within the field of competitiveness analysis supplement and enrich the area of consultancy addressed to clients. Analytical activities of the agricultural sector and public policy aim at presenting a far-reaching look at the evolution of the profession of a farmer and thereby promote projections and introduction of innovations by farmers to the choices they make and business decisions they take.

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17. The impact of CAP on agriculture in the opinion of farmers

17.1. Introduction

The paper is an integral part of works conducted under the task “Analysis and assessment of CAP instruments that affect production decisions of farmers." The preceding research concentrated on literature studies, analysis of the EU and Polish legislation, analysis of programme documents of the operational programmes including measures related to the support of economic activity development in rural areas and analysis of the Central Statistical Office (CSO) statistical data and of monitoring data of implementation of measures related to support for economic activity in rural areas from domestic paying agencies. As a next step, the analysis was also carried out on numerical data from Polish FADN. The aim of the above research was to determine the changes in Polish agriculture after the accession to the European Union (EU) and the role of Common Agricultural Policy (CAP) in these processes. The paper supplements the knowledge in this regard and will be used to verify conclusions resulting from the research described above. The main aim is to identify the opinions of farmers — a group that has the greatest interest in this problem — on CAP and its impact on their economic activity.

17.2. Methodology

In order to achieve the assumed objectives the survey was developed and added to the Great survey of the Social and Regional Policy Department of IAFE NRI. The survey research, just like data collection method, is a continuation of long-term research conducted once every few years. The original survey method consists mostly in analysing an entire village rather than randomly selected farms. Thus links of particular farms with their natural environment, i.e. the village, are taken into consideration. This research method combines detailed approach with global perspective.

The survey conducted in 2011 is the 16th edition of the analysis. It is a system equivalent to the panel research in 76 villages. The selection of villages was determined by representative value (in total 1/500th of all the rural households) and by proportional distribution of sample by region.

Survey forms contain fixed list of questions, i.e. repeated in all the following surveys, which allows analysis of the changes in basic rural structures (agrarian, market activity of agricultural holdings, sources of income of the rural families) at national and regional scale. Separate questions, which change in the following editions of the survey, refer to the most current problems of rural areas and agriculture during the analysed period. Currently they will concern mainly CAP effects on support of rural areas and economic strengthening of agricultural holdings and the opinion of respondents on the influence of global crisis on their current economic situation. Answers to these questions are the basis for identification of farmers' opinions on the role of CAP regulations in Polish agriculture.

First of all, the results have been statistically analysed on the national level, which was used as a basis for this paper. The obtained information has enabled the formulation of initial conclusions that concern changes in the surveyed farms, their reasons and the CAP role in these processes and its effectiveness as a market and income stabilisation factor.

17.3. Changes in agriculture

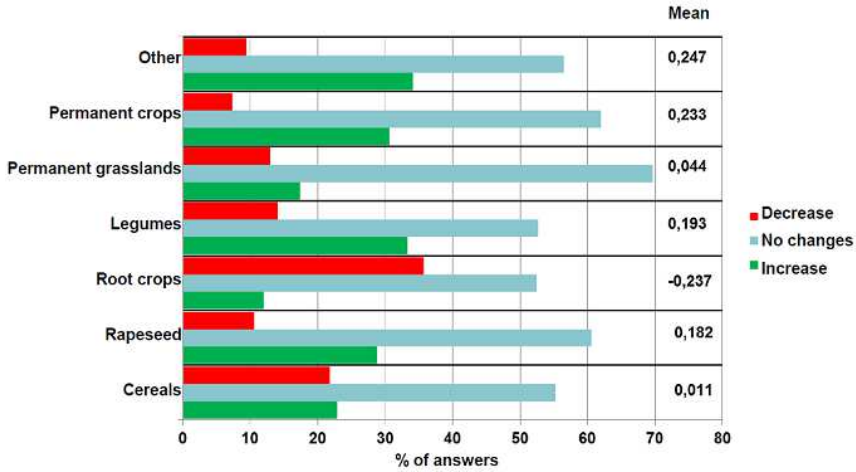
In order to determine the changes of areas of cultivated plants after the accession to the EU farmers have indicated the area of respective crops in 2011 and its permanent change as compared to 2003, the year preceding the accession. To determine the direction of changes the arithmetic mean between -1 and 1 was used (the range of possible answers was defined as follows: -1 – decrease, 0 – no changes, 1 – increase), interpretation of which is as follows:

- value higher than zero means that on average farms increased the area of crops;
- value lower than zero means that on average farms decreased the area of crops;
- the more difference from zero, the more frequent decrease/increase of acreage of crops.

Of the following groups of cultivated plants the negative value of the arithmetical mean was noted only in the case of root crops (-0.237), which indicates that during the analysed period farms more frequently reduced the acreage of these crops. As far as other groups of crops are concerned, the situation was re-

versed – the increase of the acreage of crops was more frequent. The average values, the negative and the positive, are relatively not very different from zero, which means that the frequency of these changes in the studied group of farms was small.

Figure 1. The changes in acreage of cultivated plants after the accession to the EU

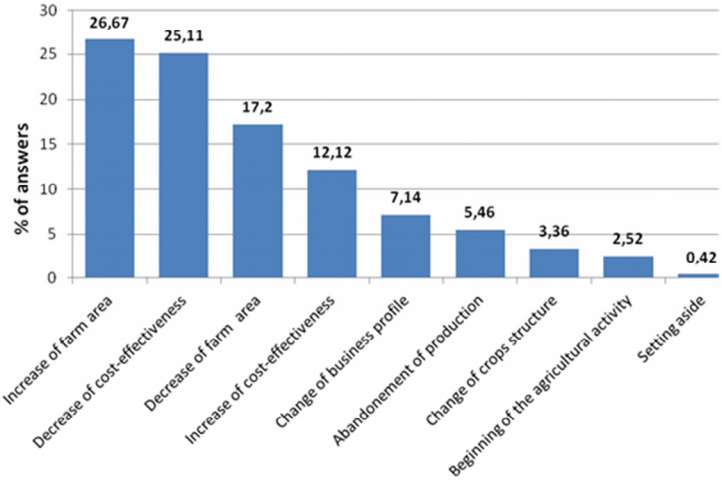


Source: own calculation.

More than a half of the surveyed farms have not reported permanent changes in the acreage of crops. The farms have more frequently increased than decreased the acreage of most crops, but the difference was small. Root crops were the exception. The least often farms have reported changes in the acreage of cereals, permanent grasslands and permanent crops (above 60% of the sample). About 30% of studied farms increased the acreage of other cultivated plants, legumes, permanent crops and rapeseed. In turn, the most farms have limited root crops (about 35%) and cereals (above 20%).

As a reason of these changes respondents have indicated mostly the willingness to change the farm area, while almost 27% of them have aimed at increase of its size and 17% at decrease of it.

Figure 2. The reasons of changes in the acreage of cultivated plants after the accession to the EU

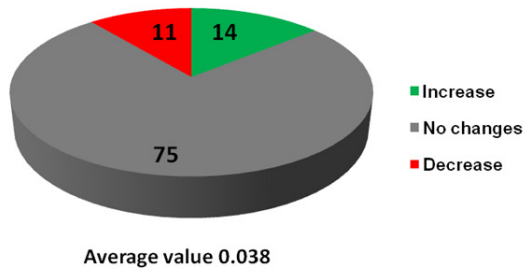


Source: own calculation.

The second group of factors was changes of cost-effectiveness – decrease (25%) or increase (12%). The next factors indicated by the farmers were less significant. They include change of business profile (7%) and abandonment of agricultural production(5%).

Simultaneously, after the accession to the EU three quarters of the studied population did not show the significant changes in consumption of productions means. The increase of consumption was reported by 14% of the sample and in the remaining farms (11%) the consumption of production means decreased.

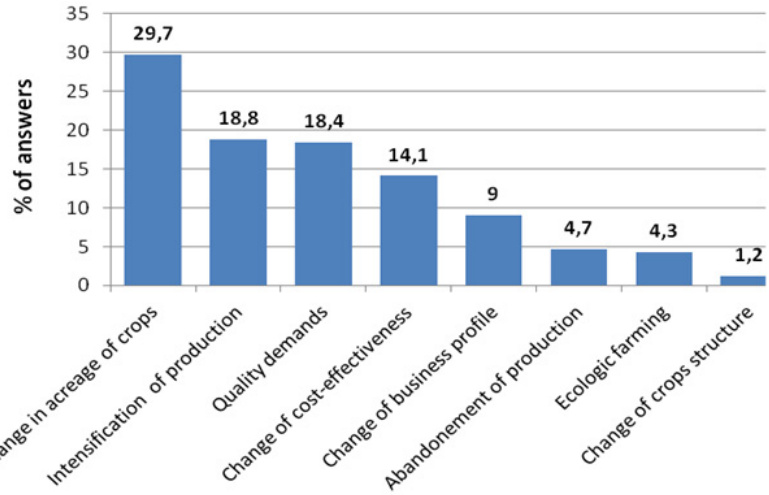
Figure 3.Changes in consumption of production means after the accession to the EU (% of answers)



Source: own calculation.

Among the reasons of changes in consumption of production means the surveyed farmers mentioned the change of the crops acreage (almost 30%), intensification of production (19%), obtaining products of specified quality (18%) and change in cost-effectiveness (14%). Less frequently changes in consumption of production means were caused by change of production profile, abandonment of production or change for organic farming.

Figure 4. The reasons of changes in consumption of production means after the accession to the EU



Source: own calculation.

17.4. The CAP influence on changes in agriculture.

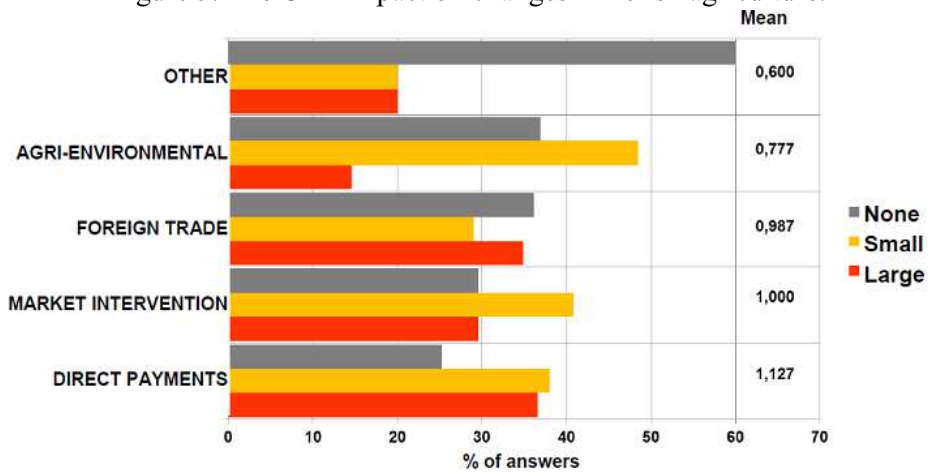
The surveyed farmers identified the influence of various CAP regulation groups as follows: 0 – none, 1 – small, 2 – large. To determine the impact the arithmetic mean between 1 and 2 was used, the interpretation of which is as follows:

- value closer to 0 means the majority of answers on lack of influence;
- value closer to 1 means the majority of answers on small influence;
- value closer to 2 means the majority of answers on large influence;

The analysis of arithmetic means obtained indicates that the CAP impact on agriculture is rather small. The advantage of answers on large impact occurs only with regard to direct payments. Over one third of respondents indicated large impact and one third small impact, only one fourth none. Values similar or equal

to one, reflecting small impact of CAP regulations, have occurred with regard to market intervention and foreign trade regulation system. Thus, the meaning of the first one is almost placed on a par with trade regulations. However, there are large differences in assessment of these regulation groups. In case of market intervention more respondents than with regard to trade regulations have indicated small impact and less have indicated none or large impact. Average values for agri-environmental and other regulation groups differ from the abovementioned regulation groups.

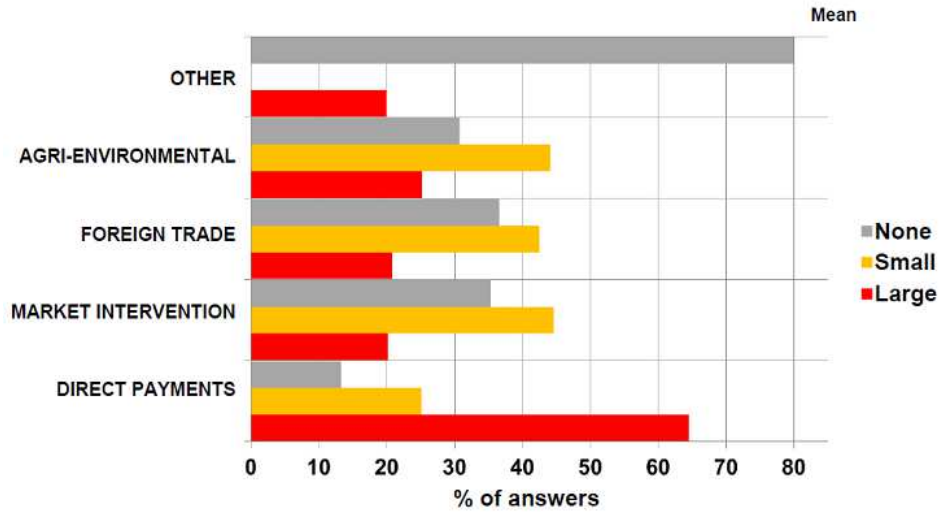
Figure 5. The CAP impact on changes in Polish agriculture.



Source: own calculation.

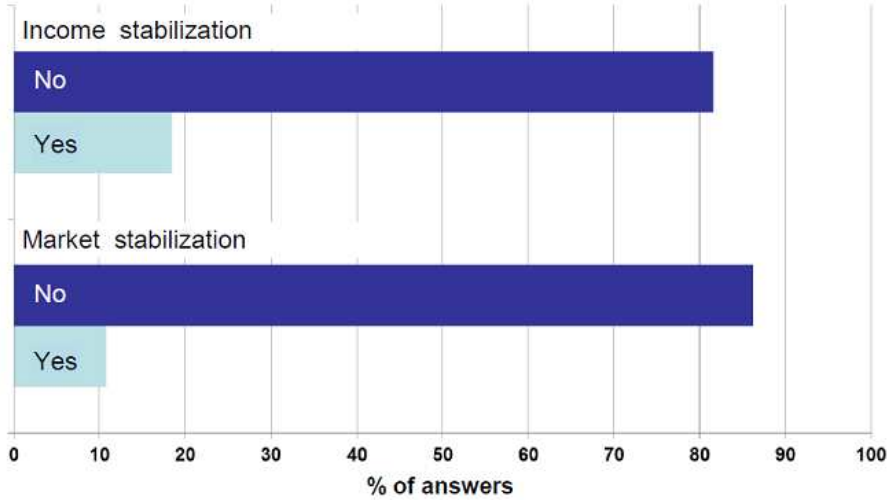
The analysis of average results concerning the influence of CAP on farmers' income (which are interpreted similarly to the assessment of regulation influence on changes in agriculture) clearly indicates dominant influence of direct payments in this respect. Almost 65% of the surveyed farmers have indicated large impact of direct support on farm income and only 13% indicated no impact. According to the surveyed farmers the influence of other regulations is small or none. About 25% of respondents indicated large influence of environmental regulations and about 20% of foreign trade regulations and market intervention with large proportion of answers indicating small influence (45%) or no influence (30-35%).

Figure 6. The CAP influence on income of agricultural holdings



Source: own calculation.

Figure 7. The CAP influence on stabilisation of agricultural markets and farmers' income



Source: own calculation.

Great majority of the surveyed farmers (80-90%) takes a negative view on the role of CAP regulations as a factor stabilising agricultural markets and income from agricultural activity. However, the proportion of positive assess-

ments regarding the income stabilisation (18%) is almost twice as high as the assessments concerning market stabilisation.

17.5. Conclusions

It should be noted that on the basis of the analysis of survey data on the national level general preliminary remarks can be drawn. The analysis will be extended by region and divided into types of farms, which should enable for formulation of more precise conclusions.

In many places the results of analysis of the surveyed data are convergent with tendencies specified on the basis of data of the Central Statistical Office or Polish FADN. At this stage of the analysis it can be said that the influence of CAP on production changes is small and diverse depending on the types of instruments. It must be noted that direct payments are an instrument which have the largest impact on Polish agriculture, especially on farmers' income. Simultaneously the CAP influence on stabilisation of income markets is small, but slightly larger (due to direct payments) on income stabilisation. The influence of other regulations on Polish agricultural sector is small.

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18. Regional restructuring and modernization of Bulgarian dairy sector after the accession to the EU

18.1. Introduction

The dairy sector is of strategic importance for the development of the agrarian sector of Bulgaria. Milk production in 2010 accounted for 10,6% of the value of gross output of the agrarian sector [Agricultural report 2011].
Since 2007 the dairy sector has taken a turn towards restructuring and modernization with a view to meeting the standards for production of high quality and safe raw materials and products of animal origin [Bencheva 2008 2012].

After the accession of Bulgaria to the EU, the dairy sector was confronted with new conditions and challenges for its speedy integration into European markets. The main objective of the launched restructuring and modernization processes was rehabilitation of the sector, improvement of the quality and competitiveness of dairy produce based on European sanitary and hygienic standards. The newly established economic, financial and market potentials for restructuring and modernization have faced the sector with a number of requirements which the country has to meet within the framework of the Common Agricultural Policy /CAP/ [Garnevska, Bencheva 2011].

The financial aid provided to the dairy sector using European and national funds (though of a rather limited amount compared to other member-states) is predominantly utilized for: continuous harmonization of the veterinary and phytosanitary legislation; modernization of milk processing plants; meeting the requirements of the health and hygiene standards of EU; completion of the establishment of a system for animal species identification; application of a quality assurance system (hazard analysis and control center), animal wastes processing, animal waste management and animal disease control programs, establishment of systems for future outer borders inspection.

Notwithstanding the positive changes after 2007 the dairy sector is facing a number of problems, uncertain prospects for its survival and serious difficulties for dairy farmers. The basic problems are: lack of a clear long-term national

policy for development of the sector, poor institutional and personnel training, low administrative capacity in funds management are some of the main reasons for the more or less limited acquisition of European funds for restructuring and modernization of dairy farms.

The crisis in the dairy sector in Europe led to a reduction in purchase prices. Furthermore, this confronted milk producers with a serious challenge in terms of their economic survival. According to data from the National Statistical Institute (NSI) the purchase price of cow milk in the first quarter of 2010 was BGN 480,20/1000 l, while a research of the Institute of Agricultural Economics shows that at a purchase price of BGN 500/1000 l profitability is just 0,94% (Sector analysis, 2011). In 2009 the rise in prices of means of production was 30,9% on the average, while the growth of purchase prices was twice lower – 15% (according to data from NSI). All these facts speak of a serious decrease in the incomes of dairy farmers. Therefore the best strategy would be to maintain production through restructuring and modernization.

In its turn this necessitates adoption of a series of changes, such as: increase in the investments for providing high quality genetic material; technological modernization of farms, milk collection centers and installations for processing dairy products, as well as to encourage trading, especially export; analysis and assessment of the factors of restructuring and modernization in the sector for improvement of the economic results of dairy farms.

The aim of this article is to analyze the condition and the main problems of restructuring and modernization of the dairy sector after the accession of the country to the EU and the effect they have on the economic status of dairy farms in regional aspect.

The article is structured into two basic sections. The first section includes analysis and revelation of the condition and the main problems of restructuring and modernization of the dairy sector, basic factors and tendencies in the development of the sector. The second section comprises an analysis of the effect and interaction of certain factors in restructuring and modernization on the amount of profit earned by dairy farms in the South central region (SCR) – Plovdiv district.

18.2. Material and methods

For the purpose of the analysis made in the first section some statistical data, analyses and materials from various sources are used, such as the Ministry of Agriculture and Food, the National Statistical Institute (NSI), the National

Social Security Institute (NSSI), Eurostat, European elaborations on the sector. The basic indicators used to reveal the condition, the problems of restructuring and modernization, and the tendencies in the development of the dairy sector, are: number of dairy cattle, average yield of milk, and volume of production, size and structure of dairy farms.

In order to investigate the impact of factors on the rate of profit, 68 dairy farms in the South central region (Plovdiv district) were examined. This region has a leading position in milk production. In 2011 its share in the total quantity of milk produced in the country was 25, 6%.

Correlation analysis and Pearson correlation coefficients were used to study the effect and interaction of the basic factors influencing the rate of profit in dairy farms. For the purpose of analysis the dairy farms were divided into three groups depending on the form of their economic organization. The first group includes sole proprietors (SP). These are medium-sized farms whose production is mainly intended for local markets. The second and third groups are comprised of farms of companies with registered capital – one-man limited companies (Ltd.) and limited liability companies (LLC). The dairy farms of these companies are mostly of first and second category. Restructuring and modernization of these farms is of exceptional importance for maintenance and development of a stable economic status.

Data and information were gathered through direct contacts, filling-in inquiry forms and tables worked out especially for the purpose of analysis, from company documentation, etc. The study covers the period 2007-2011. SPSS software was used for processing the data.

18.3. Results and discussion

Analysis of the status and the main problems of restructuring and modernization of the dairy sector

18.3.1. Milk Production

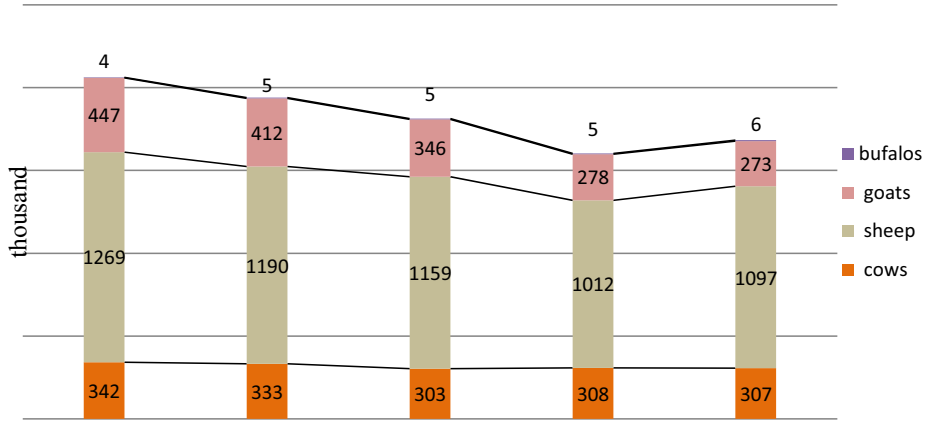
The analysis of the data about dairy sector development after 2007 showed both weaknesses and problems of its status and development, as well as potentials for its restructuring and modernization.

The agrarian reform in livestock farming prior to the accession was conducted following a model which turned out to be economically and socially inexpedient. The drawbacks of this model had a disastrous effect on the development of the dairy sector. The main negative effects are: drastic decrease in the

number of dairy cattle, highly polarized structure of dairy farms, many small-sized farms (1-2 cows), low number of large size dairy farms, poor relations with the processing industry, absence of a flexible system of contracting with producers, processing plants and dealers, unavailability of a fodder base (the majority of dairy farms are not land owners which forces them to purchase expensive fodder).

The ongoing destructive processes and contradictory changes in the dairy sector aggravated the economic and business environment. Because of that in the period 2007/2011 the negative tendency towards decrease in the number of dairy cattle was preserved (Figure 1). The greatest decline was in the number of goats (about 40%). Dairy cows decreased by 11%, while the number of ewes fell by 14%.

Figure 1. Number of dairy cattle



Though the number of dairy cattle decreased, the total quantity of milk produced grew by 12% during the studied period. The growth of buffalo milk production was the highest (26%). The growth in production is mainly due to the increased average milk yielding capacity.

Under the conditions of regulating the production of milk and dairy products by the dairy produce quota system, the decrease in the number of animals did not lead to a reduction in the total quantity of milk produced, neither to a drop in the average yield of milk (Table 1) Production of cow milk is of greatest significance (87,6%). The share of sheep, goat and buffalo milk is 12,4% of the total milk output. This leads to more diversified market supplies which is one of the great chances of the sector to offer various products of unique and specific properties.

The average yield of milk per cow in 2011 reached 3562 l, which is by 7% higher compared to 2007.

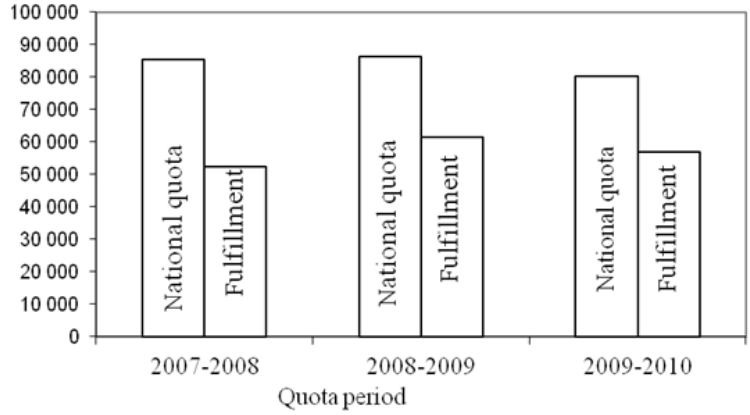
Table 1. Level of production and average milk yield of dairy cattle

Indicators	Measure	2007	2008	2009	2010	2011	2011/2010
Cow milk							
Output	Thousand tons	1148	1143	1 073	1 124	1 125	98
Average milk yield	Liters/year	3319	3415	3 512	3 542	3 562	107
Sheep milk							
Output	tons	84907	88243	87 247	85 001	89 296	105
Average milk yield	Liters/year	69	74	79	81	79	114
Goat milk							
Output	tons	87174	77465	64 090	60 410	61 543	76
Average milk yield	Liters/year	209,0	207,0	205,5	211,2	219,2	105
Buffalo milk							
Output	tons	7052	7173	7 022	7 933	8 868	126
Average milk yield	Liters/year	1326	1344	1 362	1 412	1 356	102
Total quantity							
Output	Thousand tons	1148	1316	1231	1277	1285	112

Source: Ministry of agriculture: Agrostatistics

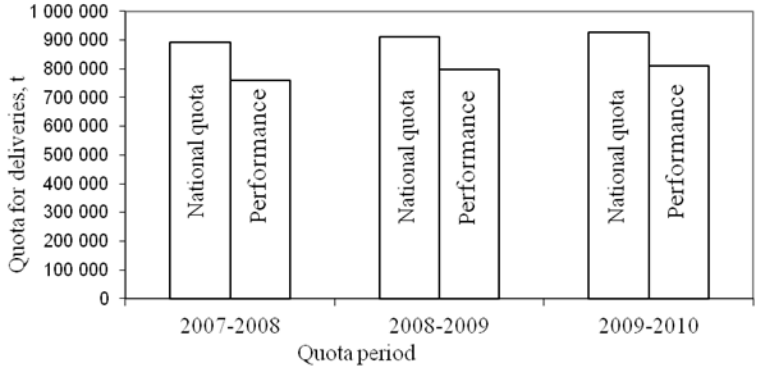
Compared to the rest of member-state of the EU, Bulgaria produces less milk than the level of domestic consumption. Our country is the only EU member-state which fulfills the national quota for direct sales and supplies at 68% and 86% of the quota respectively (Figures 2 and 3).

Figure 2. Fulfillment of the national quota for direct sales



Sources: State fund "Agriculture"

Figure 3. Fulfillment of the national quota for supplies



Sources: State fund "Agriculture"

18.3.2. Structure of dairy farms-features and problems

The condition of the production structures in dairy cattle breeding is determined by both the opportunities for effective development of the sector and the conditions for application of the measures of CAP. The main tools of the program which concern the development of dairy farms are: direct payments per unit of square surface; payments under special conditions for animal breeding products; restructuring of dairy herds, milk quota system; quality standards; export subsidies and organizational associations of producers.

The peculiar feature of livestock breeding in Bulgaria is its small-sized, fractured structure. In broad outlines, this structure of the dairy farms has not changed after 2007 (Table 2). It is determined by the large number of petty farms of quasi-market type established as a result of the reform after 1992 and the low number of large-sized farms raising more than 50 cows. The milk produced by such farms is intended mainly for private use and only part of it is offered on the market to provide some extra proceeds for the farm.

Since 2007 there has been an increasingly pronounced positive tendency towards restructuring of the dairy sector by establishment of larger-sized farms and improvement of milk quality in compliance with the European standards.

Table 2. Changes in the number and size of dairy farms

Type	Change, %		Change, %		Change, %		Change, %		total	
	farm	head	farm	head	farm	head	farm	head	farm	head
	1-2		3-9		10-19		20 and >			
2008/2007										
Cows	-13,8	-13,1	-14,8	-13,5	-8,5	-6,8	9,4	9,8	-13,4	-6,3
Buffalos	-7,6	-10,1	12,2	37,5	15,1	16,7	-13,2	-4,7	-2,8	3,1
2010/2009										
Cows	-20,3	-20,9	-18,7	-20,4	5,2	-0,2	48,9	39,2	-17,5	3,8
Buffalo	21	22,2	-26,8	-36,9	49,1	48,6	-8,3	3,2	10,9	8,2
2008/2007										
Goats	1-9		10-49		50-99		100 and >			
	-18,1	-19,0	-18,8	-20,5	40,6	50,3	8,5	17,3	-17,9	13,2
Sheep	-13,0	-14,7	-10,3	-10,9	-15,1	-14,2	21,8	22,3	-11,9	-3,7
2010/2009										
Goats	-12,2	-10,4	-24,7	-24,7	-23,5	16	-17,6	-15	-12,4	-9,2
Sheep	-7,7	-7,7	-25,5	-26,3	-18	-22	16,8	12,4	-9,3	-3,6

Sources: Ministry of Agriculture, Agrostatistics

The data in table 2 show an insignificant decrease in the number of farms raising dairy cows, as well as a slow process of concentration of the number of cows into larger farms. In 2010, 93700 milk cows or 30.4% of all dairy cows

were bred in farms which had just 1 to 3 animals. The number of farms breeding 20 or more dairy cows increased by 48.9%. The number of cattle raised in such farms increased by 39.2%.

Sheep farms decreased by 9.2% in 2010, while number of animals bred there decreased by 3.6%. The number of farms having 10 to 49 ewes for breeding purposes decreased (25.5%) compared to 2009 while the number of sheep raised therein decreased by 26.3%. The number of farms having more than 100 pregnant sheep increased by 16.8%. The number of ewes in these farms increased by 12.4% and reached approximately 440 thousand. The average size of sheep flocks in the country was 13.1 sheep, while the average number of ewes per farm was 10.6.

A characteristic feature is that dairy cow farms are classified into three categories. The first category comprises those having highest quality process equipment. The farms which belong to the second category are those that produce quality milk but are not completely equipped. All the farms of first and second category meet the requirements of the European regulation 853/2004. A positive tendency is taking shape towards an increase both in dairy farms of the first group (5,7% -2010/2011) and in the number of cows raised therein (26,3%-2012/2011). The data analysis shows that more and more farms of the first category are being modernized; they increase the number of animals in their herds, carry on a result-oriented selection to increase the milk yield and improve their production management and planning. However, these are rather insufficient both in terms of volume and of produce. The number of farms in the second group fell by 37% in 2011 compared to 2010, while the number of cows bred in them – by 28%. The reason for this is the ongoing tendency of more and more dairy farms qualifying for the first category.

The processes of restructuring, growing in size, modernization and optimization of the production process in dairy farms will continue driven by the struggle for survival and the effect of the instruments of CAP in the sector (Bashev 2008). Due to the high level of fragmentariness of the livestock breeding production the benefits from the application of CAP will be enjoyed mainly by large-scale producers. This is because small-sized dairy farms are characterized by primitive technologies, low productivity, low standards in terms of safety, quality, hygiene, environment protection, humane attitude towards animals [Bashev, 2008; Bencheva, 2012; Ivanov, 2009]. Most of them sell their milk to small-sized enterprises, usually of low quality which does not meet European standards. They are facing the risk of losing result-oriented subsidies per liter yield of milk granted to stimulate production of good quality raw milk. Any event of large-scale bankruptcy of small-sized farms might lead to a major social

problem in many regions of the country. To most of the petty farmers this is the family means of livelihood and the only occupation for them without any alternative. Discontent in this respect had already been provoked by mass bankruptcies of farms at the end of 2008. The main reason behind it was the severe drought in 2007 which caused a drastic rise in fodder prices. Since farmers had no other means of feeding their animals, they started slaughtering them.

In order to overcome such problems it is imperative that the European practice of merging small-sized farms should be applied in our country, too. Development of a program scheme on the part of the government is needed in order to provide incentives for investments in refrigeration equipment, milking installations, storage and transportation of raw cow milk, meeting the requirements for trading in and putting milk and dairy products on the market. This is the way to guarantee an output of milk meeting quality standards.

Establishment of dairy cooperatives which could organize collection of milk is a good practice, especially in areas where farms are quite scattered. Cooperation would boost the market potentials of small-sized farms. When united in producer organizations these farms could discover better markets for sale of their dairy products. However, the issue of overcoming the problem of unwillingness for cooperation is quite serious. One of the reasons is the discredited cooperative system that existed in the times of socialism.

The low level of specialization of the farms is also a grave structural problem [Bencheva, 2012; Bashev, 2008]. It leads to low efficiency, inadequate level of application of recent technologies and low competitiveness. Some producers tend to mix milks of different types – cow‘s, sheep’s, goat’s milk. This creates great difficulties for dairy plants to provide themselves with the high quality raw milk they need. The insufficient quantity of milk on the one hand and the high capacity of the dairy industry on the other hand require urgent measures for investments in and modernization of milk production. This is the way to overcome today’s unfavorable practice of compensating the shortage of high quality raw milk by imports mainly from Hungary, Germany and Poland.

In case of failure to solve the milk quality problem there would be a genuine risk of drastic decline in petty production which will have a negative impact on the entire sector. One of the serious effects would be a rise in prices and a drop in the competitiveness of the milk processing sector [Sector analysis, 2011].

The third category includes farms which do not meet the requirements in terms of equipment and technology, as well as in terms of milk quality. These are small-sized farms having 2-3 cows, which cannot ensure proper sanitary and hygienic conditions. Such are the farms located in mountainous areas where their number is prevalent. This is why they are not assigned with the requested

quotas. Approximately half of all the cows in the country are raised in such farms. It proves to be extremely difficult for these farms to establish up-to-date farms with modern equipment and facilities. This is why most of them discontinue or redeploy their business to other types of production.

A serious factor of restraining effect on investments is the drastic rise in the prices of the means of production and especially those of fuels, fodder and drugs against the pegged or slightly increased purchase prices of milk. The impact of this is a considerable retardation of the modernization and technological renovation of the sector.

The technological level of production is directly related to the yield, transportation and storage of milk. This relationship is substantiated also by the normative documents regarding the quality of milk and dairy products supplied to the market. In order to cope with this problem some dairy producers worked out their own strategies which included animal breeding, provision of quality raw milk and thereafter processing, packaging, supply and transportation of high quality dairy products intended for the domestic and foreign markets. In order to provide themselves with good quality raw milk, the dairy plants which possessed the required financial, administrative and professional resources turned to organizing and establishing their own farms. This modified the internal structure of the sector as well, since some of the more powerful, technologically well-equipped and financially potent dairy companies purchase milk from farmers raising a smaller number of animals, who possess no processing facilities (Sector analysis, 2011). This gives rise to a multitude of issues related to the transportation and the quality of raw milk, the prices of purchased produce, the provision of dairy products of guaranteed quality for the domestic market.

The interrelations between milk producers and raw milk processing plants are extremely complicated, rather varied depending on the different regions and in the majority of cases they cannot be subjected to actual control with regard to quantity and biological properties of raw milk. This increases the risk in the grey economic sector since the exact quantity of purchased milk and its quality indices are unknown. This situation provokes negative influence on at least two factors – in biologic terms quality control becomes lax, while in economic terms intercompany indebtedness grows uncontrollably, wherefrom a large number of negative consequences arise both for the industry and for the market.

In this sense the modernization of dairy farms related to their status and meeting the European requirements should be solved in interrelation with provision of sufficient quantities of high quality raw milk and good conditions for its storage, transportation and processing. The quality of milk produced is low be-

cause of the lack of appropriate infrastructure, tanks and facilities for its storage. But making such investments in small-sized farms is utterly ineffective.

In spite of opportunities offered by the Rural Development Programme (RDP) for funding under measure 121, 123, etc., dairy farmers did not avail themselves of this opportunity to increase the number of cattle in their herds and modernize their farms. Modernization of farms and utilization of funds is a difficult task. The process of restructuring takes place at slow rates and the level of interest on the part of farmers is low. One of the serious reasons is due to the hindrances met by the farmers in gaining access to credits. This is why it would be necessary to provide low-interest loans to the dairy sector with priority in order to solve the problem of restricted access of farmers to financial resources. Investments are needed also for the modernization of cattle breeding farms with milking installations, milk collection centers, machinery and equipment, as well as facilities and equipment for safe disposal of manure, etc.

Though under the conditions of an economic crisis, dairy producers in Bulgaria are compelled to make considerable investments for application of the European standards for food safety, humane attitude towards animals and environment protection (application of the Nitrate directive) practically without getting any financial support within the framework of direct payments (only about 10 % of the milk producers are landowners). This necessitates adoption of specific measures for supporting the sector before 2013, which will contribute for development of our country's potentials in dairy production.

Effects of factors of restructuring and modernizing on the economic situation of dairy farms

The processes of restructuring and modernization of the dairy farms depend on the quality of management decisions. The effect of the quality of decisions affects the final economic results of the dairy farms.

For evaluation of the factors influencing the economic situation of the dairy sector farms of all three business organization types - Sole Proprietor (SP), One-man Limited Company (Ltd.) and Limited Liability Company (LLC), the correlation analysis technique was applied (Table 3). The level of profit earned in the three business types is assumed as dependent variable.

The development of the processes of restructuring, technological renovation and modernization of dairy farms depends on the quality of the human resources at their disposal. Four groups of criteria were studied as variables – average number of staff, qualification of personnel, labor productivity, payment and incentives, with indicators for the three business organization types respec-

tively. The analysis of the results showed that the effects and interaction of the factors on the economic situation of the dairy farm differed depending on its business organization type.

Table 3. Factors influencing on the dairy farms level of profit. Correlation coefficients –estimation results

Variable-Criteria and indicators	Dairy farms			
	Total	Sole Proprietor (SP)	Ltd.	LLC
Number of cows	0,794**	0,448*	0,811**	0,968**
Total production, l	0,849**	0,520*	0,948**	0,883**
First criterion - average number of staff				
Total employed in the farm	**0,924****	**0,823****	**0,958****	**0,632***
Of which, management staff	**0,876****	**0,879****	**0,932****	**0,811****
Age of 15 to 35	**0,639****	**0,001**	**0,823****	**0,619***
Age of 36 to 55	**0,613****	**0,946****	**0,369**	**0,331**
Aged above 56	**0,246**	**-0,162**	**0,211**	**-0,028**
Men	**0,461***	**0,179**	**0,493***	**0,238**
Ladies	**0,476****	**0,118**	**0,511***	**0,093**
Work experience to 15 years	**0,838****	**0,096**	**0,913****	**0,638***
Work experience from 16 to 35	**0,506****	**0,941****	**0,458***	**0,311**
Work experience above 36	**0,060**	**-0,168**	**0,104**	**0,017**
Second criterion – qualification of personnel				
Bachelor	**0,513****	**0,291**	**0,836****	**0,823****
Master's degree	**0,726****	**0,394***	**0,948****	**0,996****
Experience in the specialty to 15	**0,838****	**0,428***	**0,794****	**0,832****
Experience in the specialty from 16 to 35	**0,643****	**0,933****	**0,583***	**0,611***
Work experience above 36	**-0,244**	**-0,781****	**-0,482***	**0,033**
Specializations in the country	**0,402***	**0,000**	**0,584***	**0,961****
Specialized trainings abroad	**0,658****	**0,000**	**0,631***	**0,994****
English speaking	**0,546****	**0,179**	**0,611***	**0,843****
Third criteria - Labor Productivity				
Gross Output / lev	**0,690****	**0,244**	**0,828****	**0,624***
Gross Output per employee / lev	**0,378***	**0,490***	**0,346**	**0,244**
Gross Output per man / lev	**0,475****	**0,232**	**0,581***	**0,390**
Fourth criteria - Payment and incentives labor				
Primary payment and benefits, lev.	**0,749****	**0,956****	**0,638***	**0,548***
Additional incentives, lev	**0,499****	**0,330***	**0,548***	**0,811****
Observations, %	**100**	**45**	**22**	**33**

*Own calculations; *,**-indicates statistical significance at 5% and 1% significance level.*

The number of animals (0,794**) and the total production (0,849**) have a very strong influence on the economic results of the dairy farms. The greatest influence of these factors is observed with limited liability companies (LLC), with coefficients 0,968** and 0,883** respectively, at 5% significance level. These are large-sized farms with over 1200 cows. Thanks to their good financial situation these farms are in the position to attract highly qualified management personnel. The good management practices have a positive effect on the final economic results. The management policy and investment decisions aimed at technological renovation, modernization and provision of up-to-date equipment are effective first and foremost for the commercial companies (0,932** and 0,811**). Most promising for the economic vitality and development of these farms are the competences and skills of young specialists aged up to 35 years (0,823** and 0,619*). Whereas in small-sized farms the decisions for modernization and development are influenced by specialists aged up to 55 (0,613**).

For the implementation of new technologies and innovative decisions, development of effective practical measures for production modernization and the sale of milk, the merit goes to the specialists with professional experience of about 15 years (0,838**).

The quality of their managerial decisions are best manifested in one-man limited companies (0,913**). In smaller farms, the specialists having professional experience of up to 35 years are of greater significance.

The educational, professional training and experience of the specialists in the business companies also exert a very strong influence on the economic status of dairy farms. The influence of both bachelor's degree and master's degree is almost equally important. Specialists who attended specialized training programs either in the country or abroad have contributed for implementation of good production practices, contemporary equipment and technologies, application of European standards, humane attitudes towards animals and environment protection (0,961** and 0,994**).

The good level of payment and additional incentives are key factors for retaining well-qualified specialists and development of economically viable dairy farms.

18.4. Conclusions

Based on the results from the performed analysis of the status and the processes of growth in size, restructuring and modernization of dairy farms, the following major inferences can be drawn:

- All decisions taken in the dairy sector after 2007 are resultant from the new organizational, market economy environment after the accession to the EU. This is an environment of practical adaptation to the EU policy in the dairy sector. Its development is related to the ongoing processes of amalgamation and concentration of production.
- Restructuring and modernization of the dairy sector is going at a slow pace due to delayed administrative measures and government support, especially for the farms of the first and second groups, which have to meet the requirements of the European quality standards. The slow pace of the process of enlargement of farms is expected to be kept for the next few years, while according to expert estimates the number of dairy cattle in the country is expected to grow.
- Though the period for unification of the standards for cow milk quality in accordance with European requirements was extended, modernization of small-sized farms did not take place as anticipated. A serious problem left unsolved is the lack of support for small-sized cattle-breeding farms, which suffer impeded access to credits. If they are forced to diminish or discontinue production, a considerable rise in milk deficiency is to be expected on the market. The anticipated guarantee schemes for supporting livestock breeders were not implemented. Quite delayed was the enactment of the regulations for direct sales by small-sized farms, which were aimed at eliminating intermediaries and allowing petty producers to profitably sell their produce from the farm.
- Finding a solution to the milk quotas problem is necessary. At many places there are farmers who raise large numbers of cattle but have no quota assigned. Amalgamation of farms turned out to be another serious problem. There is a need for implementation of modern equipment and encouraging consolidation of dairy producers.
- The educational and qualification level, as well as the remunerations of dairy farm employees will be of decisive significance for acceleration of the processes of restructuring and modernization in dairy farms. The level of knowledge, professional experience and competences of the employees has a strong influence on the economic results of the dairy farms.

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19. Trade arragements and their impact on food sector development in Balcan region countries candidate countries

19.1. Introduction

CEFTA is a free trade agreement of the Central Europe that was signed in December 1992 by then-Czechoslovakia, Hungary and Poland. Slovenia joined CEFTA in the year 1997, Romania in the 1996, Bulgaria in 1999, Croatia in 2003 and Macedonia in 2006. The main objectives of CEFTA were: harmonization of economic relations, ensuring an identical trade treatment and removal of trade barriers between the signatory countries. Also, CEFTA acted as one of the preparatory activities of the signatory countries on the path to EU membership. Thus, the signatory countries set following conditions for joining CEFTA: signed Association Agreement with the EU, membership in the World Trade Organization (WTO) and the consent of all members of CEFTA. With the entry into the European Union in 2004, the Czech Republic, Hungary, Poland, Slovakia and Slovenia withdrew from CEFTA. Members remain Bulgaria, Romania, Croatia and Macedonia. In Brussels, at 10th October 2006, Agreement Amendments on CEFTA have being initialled, which enables access to this agreement of the SEE countries. The agreement was signed by Albania, Bosnia and Herzegovina, Montenegro, Croatia, Moldova, Macedonia, Serbia and UNMIK / Kosovo on the 19 December 2006. Bulgaria and Romania also signed the Agreement but after accession (1 January 2007), they withdrawn from CEFTA.

CEFTA 2006 is based on the experience of the countries of South Eastern Europe in trade liberalization, through the implementation of bilateral free trade agreements and their preparation for membership in the European Union, and the positive experiences of the "old" CEFTA. The idea of trade liberalization in the region of Southeast Europe was realized through the Stability Pact for South Eastern Europe. With the entry into force, the CEFTA 2006 replaced the previously existing network of bilateral agreements between the signatory countries. CEFTA 2006 includes successful regional cooperation - particularly trade, simplification of contractual relations, introduction of diagonal accumulation, the removal of technical barriers to trade, improving the mechanisms for resolving disputes. Also, this agreement introduces new areas of cooperation, which were

not covered by their past bilateral agreements or the "old" CEFTA. It is about services, investment, public procurement and intellectual property protection.

CEFTA 1992 included the areas of the Baltic Sea, the Adriatic and the Black Sea and had a market of approximately 90 million people. Today CEFTA 2006 includes market of approximately 25 million people and in the world trade accounts for 0.2-0.3%. With the CEFTA 2006 agreement, the parties agreed to develop relations with the EU and that it will carry out mutual trade relations in accordance with the rules and disciplines of the WTO whether the member countries were the members of WTO or not.

The main purpose of the Agreement for the Countries was to eliminate the obstacles to their mutual trade, promotion of commercial and economic co-operation in areas of common interest, creation of favourable conditions for the development and diversification of trade between the Parties, fostering the intensification of mutually beneficial economic relations among the Parties, wishing to contribute to the development of each Party's relation to the European Union and integration into the multilateral trading system. The countries have committed to conduct their mutual trade relations following the rules and disciplines of the WTO, whether or not they are members of the WTO.

The Agreement also calls the signatory countries for following some basic trade conditions: the Combined Nomenclature ("CN") of goods shall be applied to the classification of goods; for each product the basic duty, shall be the duty actually applied in trade between the Parties on the day preceding the entry into force of this Agreement; reduced duty shall replace the basic duty (concluded as a result of membership in the WTO or tariff negotiations within the WTO); all quantitative restrictions on imports and exports and measures having equivalent effect shall be abolished; no new quantitative restrictions on imports and exports and measures having equivalent effect shall be introduced; the Parties shall abolish all customs duties on exports; no new customs duties on exports shall be introduced; no new customs duties on imports shall be introduced nor shall those already applied be increased; the Parties shall abolish customs fees in their mutual trade; the Parties shall apply Most Favoured Nation ("MFN") duty on imports of the selected agricultural products when this is lower than the preferential customs duties specified the products selected.

For agricultural products, applied are mutually approved tariff concessions which are generally transferred from bilateral agreements. These are the full liberalization, preferential tariffs and quotas with preferential tariffs.

In order not to jeopardize domestic production of individual countries; CEFTA allows a certain degree of protectionism if the proof can be found that the domestic production is threatened by the imported goods. This is explained

as follows: “any product is being imported in such increased quantities and under such conditions from a Party to this Agreement as to cause or threaten to cause: a. serious injury to domestic producers of like or directly competitive products in the territory of the importing Party, or b. serious disturbances in any sector of the economy which could bring about serious deterioration in the economic situation of the importing Party, the importing Party may take appropriate bilateral safeguard measures against the other Party given the particular sensitivity of the agricultural market and solve any differences between them through direct consultations.

The main expected effect of the implementation of free trade agreement is the acquisition of price competitiveness of the country which allows duty-free access to their own markets. Indirect, positive effect of tariff liberalization is the enlargement of the market and locating manufacturers in the zone of the customs union what enables them to supply a single market from the most suitable location. So, the expected increase in foreign direct investment, as well as increased competition leading to lower prices and benefit for consumers through the lower prices. What are the benefits for consumers is the cost to the state budget through lower customs revenues. For domestic producers this represents the pressure, to reduce the prices or to reduce production, or increasing the efficiency of production survives with higher production and lower prices.

19.2. Characteristics of the economy of the CEFTA countries

The economy of the CEFTA countries is characterised by: small markets, small volume of intra trade, larger with EU; incompatibility with international norms and standards, lack of competitiveness, unfavourable export structure, negative balance in foreign trade, insufficient infrastructure, lack of working capital and credit support, and high share of the grey economy. Beside above mentioned factors there are still existing trade barriers that slow down the growth of economic exchange between the countries. These barriers can be summarised as: complicated procedures for the flow of goods and bottlenecks at border crossings, lack of internationally recognized accreditation and certification bodies and insufficient number of authorized laboratories and institutions, non-recognition of certificates of quality, phytosanitary, sanitary and veterinary documents, inadequate international standards and technical regulations, lack of adequate infrastructure (transport, banking, insurance, telecommunications).

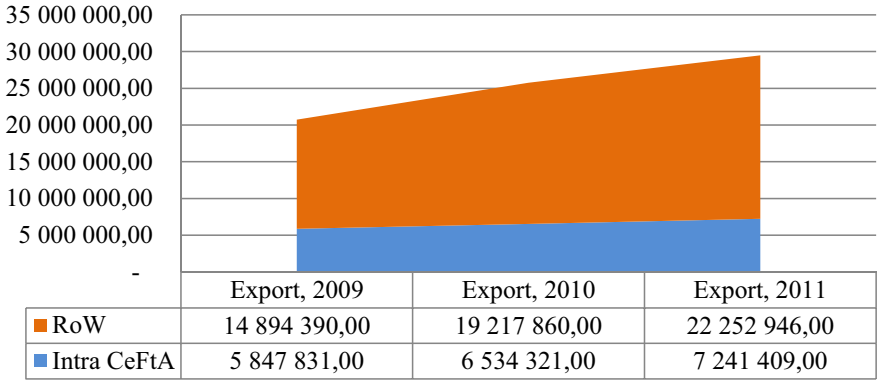
Table 2: Comparative indicators of member countries, 2011

Countries	Population (000s)	GDP (billion USD)	GDP per capita (USD)	GDP growth (%)
Albania	2832	12847	4131	2
Bosnia and Herzegovina	3839	17965	4618	1.7
Croatia	4291	63842	14457	0
Macedonia	2058	10055	5012	3
Moldova	3560	7559	2128	6.4
Montenegro	625	4332	6668	2.5
Serbia	7400	43192	6267	1.8
UNMIK Kosovo	1734	5601	3103	5

19.3. Trade within RTAs as a share of total trade

Total trade of the CEFTA countries had an upward trend in the period 2009-2011. Member countries of CEFTA achieved much greater trade exchange with the rest of the world than between the member countries of CEFTA. The total value of exports in the CEFTA region ranged from 5.8 million in 2009 to 7.2 million euros in 2011 and had an average growth of 10.14%. The value of exports of the CEFTA countries with rest of the world increased and ranged from 14.9 million in 2009 to 22.3 million in 2011 with an average annual growth of 18%.

Figure 1: Export trade within CEFTA as a share of total export

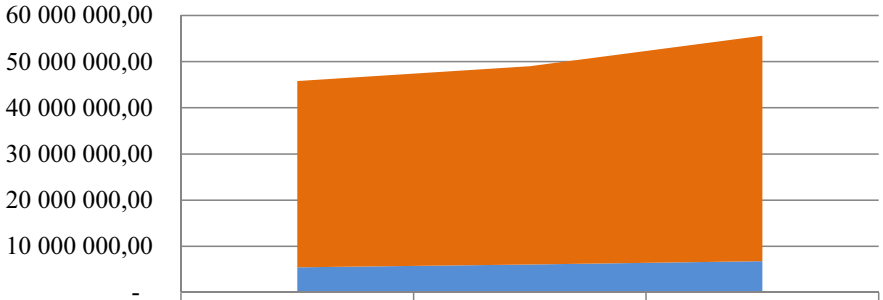


	Export, 2009	Export, 2010	Export, 2011
RoW	14 894 390,00	19 217 860,00	22 252 946,00
Intra CeFtA	5 847 831,00	6 534 321,00	7 241 409,00

The total value of imports between CEFTA countries ranged from 5.4 million in 2009 to 6.7 million euros in 2011 and had an average growth of

10.62%. Value of imports of the CEFTA countries from the rest of the world ranged from 40.39 million in 2009 to 48.8 million in 2011 and had an average annual growth of 9%. Export-import ratio observed at the level of the region amounted to an average of 107% between countries in the region, and an average of 40% of the countries in the region compared to the rest of the world.

Figure 2. Import trade within CEFTA as a share of total import

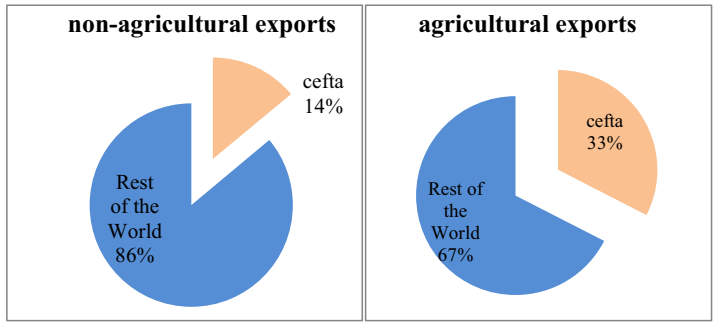


	Import, 2009	Import, 2010	Import, 2011
RoW	40 390 700,00	42 955 428,00	48 825 420,00
Intra CeFtA	5 426 441,00	6 061 678,00	6 792 189,00

19.4. Destination of the export

When it comes to the export of agricultural relative to non-agricultural products, we can notice on the Charts that the trade between CEFTA countries is more important for agriculture than for non-agricultural products. Of the total amount of agricultural products exported from the CEFTA countries, 33% of export is traded within the region, while 67% of agricultural exports go to the rest of the world. Unlike agricultural products, only 14% of total exports of non-agricultural products end up in the region, while 86% of these exports are marketed to the rest of the world. Several reasons affect the fact that trade within CEFTA is more important for agriculture than for non-agricultural products, and some of them are: shelf life of agricultural products that are exported mainly as fresh products, traditional consumer preferences towards products that come from the region, lower costs of the transport within the region, which makes cheaper feedstock for food industry, regional companies and supermarket chains that facilitate the exchange of raw materials in the region, etc.

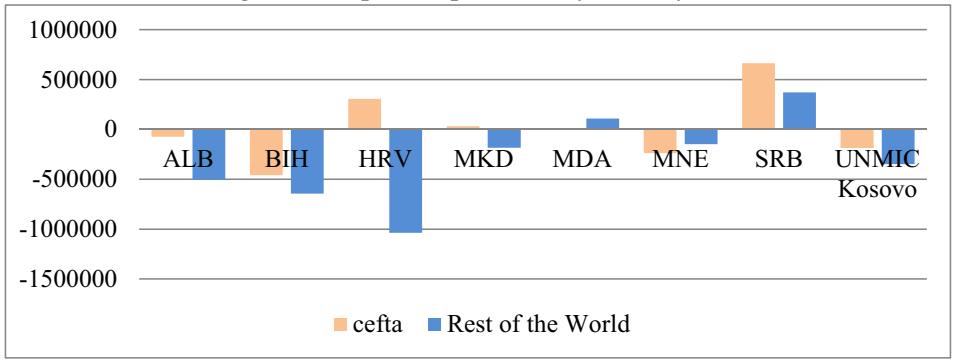
Figure 3. Destination of the export of non-agricultural and agricultural products



CEFTA intra- and extra-trade balance in agricultural goods

The ratio of imports and exports of agricultural products of the CEFTA countries, as it can be seen from the Chart, had a positive balance of trade within CEFTA countries in 2011 only for Serbia, Croatia, Moldova and Macedonia. The trade of agricultural products to the rest of the world had a positive balance achieved only by Serbia and Moldova. The biggest negative balance in trade of agricultural products to the rest of the world realizes Croatia with more than 1 billion euros, while Bosnia and Herzegovina has the largest negative trade balance within the CEFTA countries and it is about 644 million.

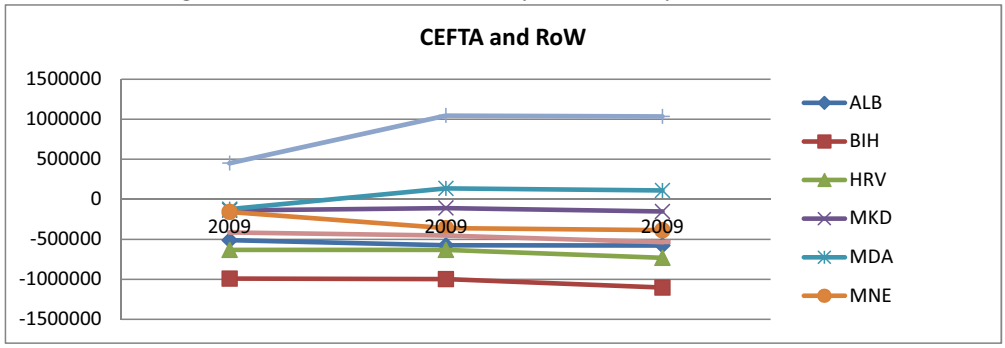
Figure 7. Export-import ratioby country, 2011



Analysed for the three-year time period we see that the countries that have a positive balance of trade of agricultural products in international trade (Serbia and Moldova) had a growth period in 2010 compared to 2009, but that after 2010 the growth slowed or declined for both Serbia and the Moldova. Serbia had a balance of growth raised by 57% from 2009 to 2010, then in 2011 decreased by 1%. In Moldova, the growth was close to 200% from 2009 to 2010, and in

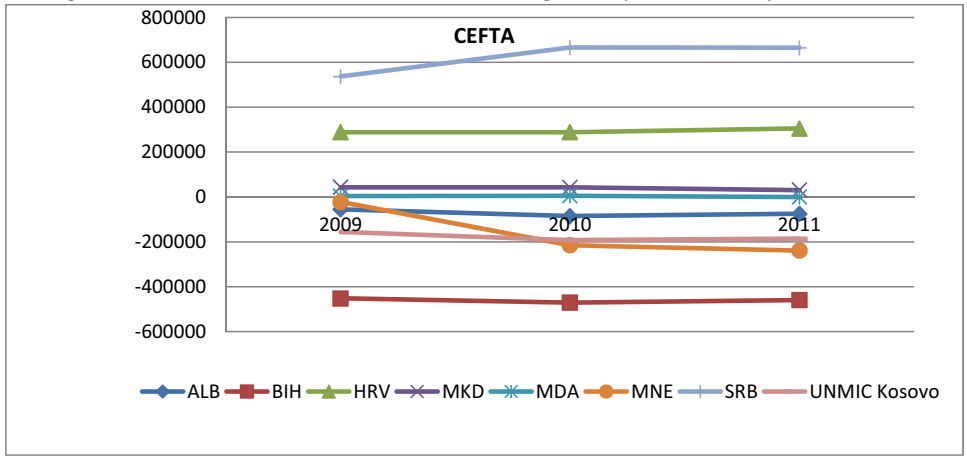
2011 achieved the balance decline of 0.2%. Other member states had consistently negative balance in the reporting period. The largest increase in negative values can be recorded for Bosnia and Herzegovina (9.6%), Croatia (13.45%) and Montenegro (56%).

Figure 8. Total trade balance by the country, 2009-2011



Similar trends took place in the reporting period in relation to the exchange of agricultural products within the CEFTA region only more countries had a positive trade balance with the trade within the region. The greater growth was recorded in Serbia, and that from 2009 to 2010 with 19% increase and in Croatia form 2010 to 2011 by 5%.

Figure 9. Trade balance within CEFTA region, by the country, 2009-2011

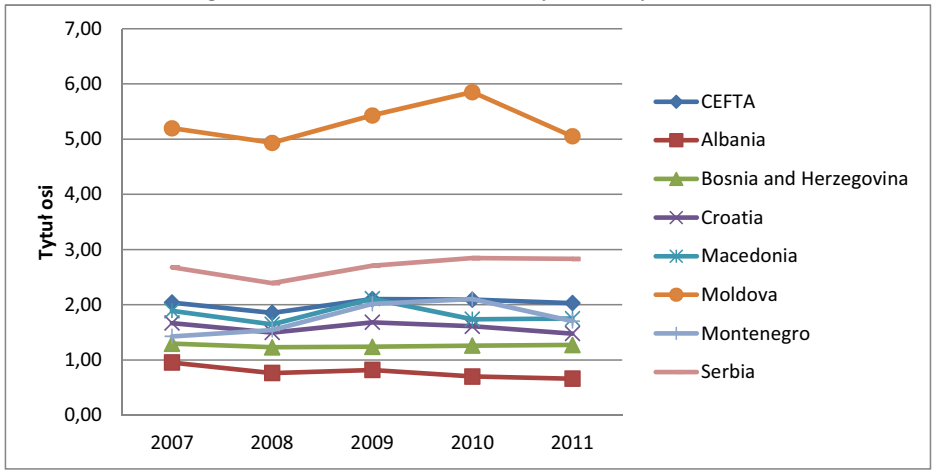


19.5. Revealed Comparative Advantage

Application of the method of revealed comparative advantage - RCA should serve to measure the competitiveness of the member countries of CEFTA trade in agricultural products.

The RCA measures the export intensity in a given agricultural product by members of the RTA, relative to other countries in the world. The RCAj is defined as follows RCAj = (xrj/Xrt) / (xwj/Xw). The variables rj rt x and X represent the value of exports of product j from region (or country) r and total exports of all products from region (or country) r respectively. The variables wj w x X represent the value of world exports of product j and total world exports both exclusive of the exports of region (or country) r. The RCA ranges from zero to infinity. Values above unity reflect a comparative advantage while values below unity reflect a comparative disadvantage (Yeats, 1998).

Figure 10. RCA index value by country, 2007-2011



On the chart below we see that the RCA index for agricultural products is greater than one for all CEFTA countries except for Albania. CEFTA region considered as a whole has an average value of the RCA index of 2. Greatest comparative advantage among CEFTA countries, measured by the value of RCA index is recorded for Moldova, which amounts to an average of 5.29 for the period 2007-2011 year. The greatest value of RCA index among the Balkan countries is recorded for Serbia and it has the average value of 2.69, in the period 2007-2011. Although Moldova has the lowest volume of trade, the share of agricultural exports in total exports is significant, proving that small countries can find their comparative advantage in the global marketplace. Negative trends

in Albania compared to other countries in consequence of, among others, the overall lack of competitiveness of the Albanian agriculture but partly low level of liberalization that Albania has in terms of agricultural products.

Although the movement of trade can't be attributed solely and exclusively by the entry into force of the CEFTA agreement still can draw certain assumptions positive and negative effects of liberalization.

19.6. Conclusions

Trade liberalisation can had a positive and negative impact on the economy of individual countries. Although, effects of CEFTA trade can't be evaluated isolated from the influence of other factors like EU integration and economic crisis, the positive impact of liberalization can be: creation of a large aggregate markets and stronger aggregate demand, which induce the strengthening of supply and economic growth for all involved in the integration, elimination of tariff and non-tariff trade barriers parts, reducing transaction costs, increasing competition, and "pushes" all actors to the constant improvement and rational use of resources, and the establishment of adequate pricing policy, which should ultimately cause price reductions, price reduction is reflected in the strengthening of aggregate demand and opportunities for further development growth of foreign direct investment.

Experiences of the countries affected by the free trade agreements proved some negative impact of liberalization such as contraction of the economy, the fall in employment, increase the current account deficit, reducing the profitability, depending on the increase in FDI, increasing poverty.

Type and intensity of the effects will depend on the capacity of participating countries to build an adequate institutional and regulatory framework. Efficient functioning of internationally recognizable institutions for certification, accreditation, measurements and standards should boost export capacities of domestic companies and promote development of the manufacturing sector. The export / import procedures at the borders could also be simplified and made more predictable (in terms of waiting times).

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20. Modelling the factors of human resources management in the horticulture sector in Bulgaria

20.1. Introduction

Socio-economic changes in Bulgaria in recent years had a significant impact on the status and development of vegetable production. Subsequently, the share of vegetables in total plant production drastically decreased. After the accession to the European Union /EU/ in 2007, the negative production and economic results in the sector are quite hard and slow to overcome. One of the main reasons for this is the inefficient human resources management.

Currently, human resources management in vegetable growing can be seen as a complex system of relationships and dependencies among different factors. They affect directly or indirectly the results of production and economic activity of the farms. Therefore, it is essential to analyze and systematize the main factors that positively influence the development and restoration of vegetable production in Bulgaria.

In this regard, the study of profitable farms may help define the strength of the relationship between different factors of human resource management and the final economic result.

The purpose of this article is to explore and model the key factors of human resources management, affecting directly and indirectly the production and economic performance of vegetable growing in Bulgaria.

The article is divided into two main sections. The first involves an analysis of the factors of human resources management, by examining their relation with the economic results of the farms. The second section presents a model of HRM factors that are particularly important to achieve high economic performance in vegetable farming.

20.2. Materials and methods

To investigate the factors of human resources management, influencing and interacting with the economic performance of market gardening, 52 farms

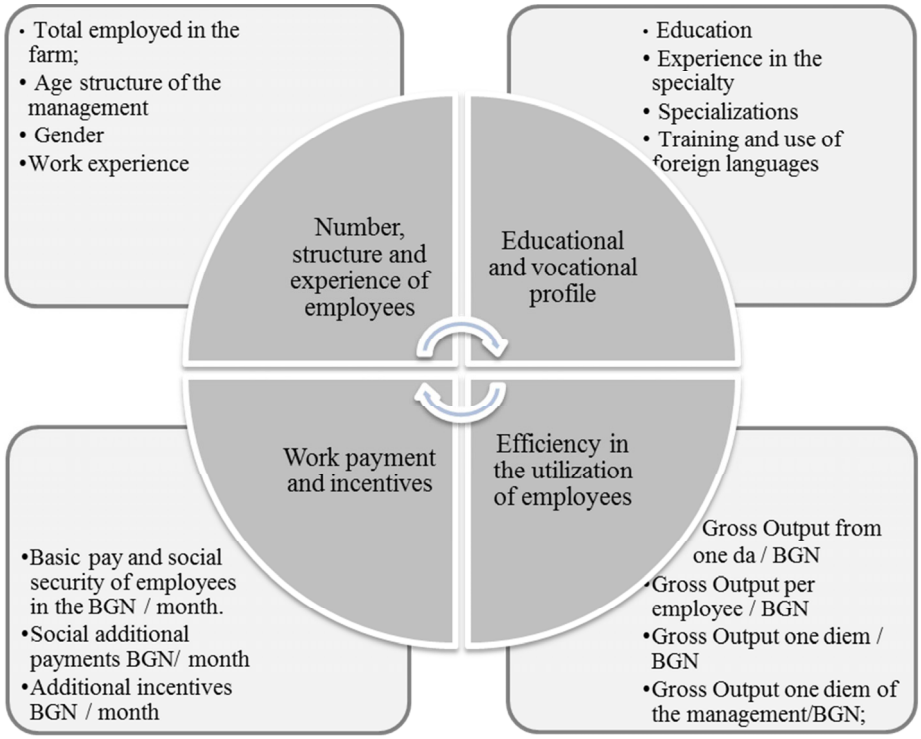
specialized in growing vegetables are studied. Most of them are located in the South Central region /SCR/, growing 44 percent of the vegetables in the country] [Agricultural Report 2011].

The selection of the farms is based on their positive economic results i.e. profit for the period. The action and interaction of the main factors of human resources management, influencing the rate of profit in the vegetable-growing farms, is studied using the correlation analysis of Pearson. For the purpose, the farms are divided into three groups according to their economic organizational structure. The first group includes farms - Sole traders /ST/. These are mostly small farms where the majority of the production is destined for the local markets. The second and third group include farms - capital companies. They include Sole limited liability companies /SoleLTD/ and Limited liability companies /LTD/. In these farms the main factors to achieve good economic results are vocational education, qualification and experience.

Based on the specifics of the sector and the human resources management in it the relations of the following groups of factors are calculated and analyzed: "Number, structure and experience of employees", "Educational and vocational profile", "Efficiency of the utilization of employees " and “Work payment and incentives"/Figure 1/. Each of these groups contains its corresponding factors revealing the deep impact on the economic performance in vegetable growing. The studied factors related to age and sex structure, work experience, educational and vocational profile, productivity, level of basic and additional payment according to the Labor Code and internal regulations in the vegetable-growing farms.

The second section shows a model of the factors of HRM. It explores the especially important factors for achieving high economic performance in vegetable farming. To create this model we implemented the coefficient analysis of Path. In this method are combined the possibilities of the correlation, regression and structural analysis. This makes it one of the best methods to study the interactions, as Path-analysis covers not only direct but also indirect links between the factors of human resource management and economic performance of farms. Thus, it is possible to evaluate the factors that have the greatest impact, and to eliminate the less influential ones.

Figure 1. Grouping the factors of human resource management affecting economic performance of vegetable farms



The study covers the period between 2007 and 2011. The data and information are collected through direct contacts, completing reports specially designed for the purpose of analysis, spreadsheets, business documents, etc. For processing of statistical data the data processing software SPSS is used.

20.3. Results and discussion

Research on the factors of human resources management, influencing and interacting with the economic performance of vegetable farming

1. Influence of the "Number, structure and experience of employees" group on the economic situation of vegetable growing

The analysis of the first group of factors "Number, structure and experience of employees" represents the strength of the bond between factors related

to the number of employees in the farms, age and sex structure and work experience, with the economic situation of vegetable growing farms /Table 1/.

Table 1. Influence of the group "Number, structure and experience of employees" on the economic situation in the vegetable-growing farms

Correlation coefficients / Factors	Total	ST	SLTD	LTD
1. Total employed in the farm	0,599*	0,436	0,564*	0,601*
a/ Of which, management	0,752**	0,494	0,702**	0,769**
2. Age structure of the management				
a/ from 15 to 35 years;	0,839**	0,811**	0,631*	0,869**
b/ from 36 to 55 years;	0,677*	0,205	0,838**	0,713**
c/ over 56 years.	-0,403	-0,105	-0,030	-0,398
3. Gender				
a/ Men;	0,617*	0,438	0,703*	0,315
b/ Ladies.	0,589*	0,411	0,641*	0,648*
4. Work experience				
a/ to 15 years;	0,634*	0,721**	0,496	0,694*
b/ from 16 to 35 years;	0,722**	0,309	0,811**	0,539
c/ over 36 years.	0,273	0,398	0,059	0,006
Observations,%	100	36	27	37

Own calculations; Correlation is significant at the 0.05 level; **Correlation is significant at the 0.01 level*

The study shows that the number of employees in the farms is a factor that strongly influences the final economic results in vegetable growing. Its influence is especially notable in the LTD group, where is reported a correlation coefficient of 0.601, statistically proven for $\alpha = 0,05$. Of particular relevance to positive economic results is the optimal number of managers. The analysis shows that most significantly, this factor affects capital companies by proven correlation coefficients of 0.702 and 0.769 at $\alpha = 0,01$. The presented data is evidence of the importance of this factor. It is essential that the balance between the necessary and the available workforce, which will help to optimize the number of managerial and line employees in the farm, is periodically revised.

When optimizing the number of management staff, bearers of the highest potential for achieving positive economic results are the managers aged up to 35. They show a very high correlation coefficient of 0.839, statistically proven for $\alpha = 0,01$. The importance of this age group is also shown in the ST / R=0,811 at α=0.01/ and LTD / R=0,869 at α=0.01/. Positive economic results in SoleLTD are mainly driven by managers aged between 36 and 55. Negative correlation is

accounted with managers aged over 56. This shows that the competences and skills of young professionals are a better perspective for economic vitality and development in vegetable farms.

Regarding the gender structure of the management on farms growing vegetables, there is a positive correlation in men /R=0,617 at α=0.05/ and women /R=0,589 at α=0.05/. Similar results are observed in the study of the groups according to their organizational and economic structure. This leads to the conclusion that the final positive economic performance does not depend on the gender of the management team.

An important factor in measuring the degree of experience in market gardening is the work experience. Its economic impact on the final result is very strong for managers with experience from 16 to 35 with a correlation coefficient of 0.722, statistically proven for α=0,01. Managers with 15 years of experience also show a strong correlation with profit - R=0,634 at α=0,05. The force of impact of this group of managers on the economic situation of the farms is much greater in the group of ST /R=0,721 at α=0,01/ and LTD /R=0,694 at α=0,05/. This shows that the quality of management decisions is not always directly related to the acquired experience. Vegetable growing is a sector in which flexible management, innovative thinking and application of new technologies is required for achieving high production and economic results. In most cases, bearers of these qualities are young managers with not very long experience.

2. Influence of the group "Educational and professional qualification profile" on the economic situation of vegetable farming

The factors involved in the educational and professional qualification profile of the managers consider the acquired level of education, further professional experience and qualifications, as well as the opportunities for learning and self-education in the vegetable-growing farms. Analysis of the impact of these factors on the economic performance will help to develop a strategy for further selection, training and development of human resources in them.

The research shows that the basic impact on economic performance in vegetable growing farms has the "education level" factor of the managers - higher Master's /Table 2/. A strong correlation with the correlation coefficient of 0.888 statistically proven for α=0,01 is reported. This indicates that higher education of the managers is a prerequisite for achieving positive results and economic production on farms producing vegetables. The importance of such educational level is confirmed in the three groups of farms, as most powerful is the relationship in LTD with R=0,893 at α=0,01. The rest of the researched degrees

show a negative impact on economic performance in the vegetable-growing farms.

Table 2. Influence of the group "Educational and vocational profile" on the economic situation in the vegetable-growing farms

Factors \ Correlation coefficients	Total	ST	SLTD	LTD
1. Education				
a/ secondary comprehensive level;	-0,098	0,152	-0,101	-0,076
b/ specialized secondary education;	-0,214	0,401	-0,093	-0,269
c/ Bachelor;	-0,005	-0,066	0,209	0,122
d/ Master degree.	0,888**	0,591*	0,738**	0,893**
2. Experience in the specialty				
a/ to 15 years;	0,614*	0,796**	0,503	0,580*
b/ from 16 to 35 years;	0,747**	0,464	0,803**	0,680*
c/ over 36 years.	-0,240	-0,104	-0,063	-0,090
3. Specializations				
a/ in the country;	0,481	0,703**	0,109	0,124
b/ abroad.	0,815**	0,239	0,639*	0,863**
4. Training and use of foreign languages				
a/ English;	0,648*	0,324	0,724**	0,549*
b/ French;	0,000nd	0,000nd	0,000nd	0,000nd
c/ German ;	0,202	0,000nd	0,238	0,109
d/ Russian;	0,649*	0,511*	0,698**	0,211
e/ other languages.	0,766**	0,494	0,639*	0,806**
Observations,%	100	36	27	37

Own calculations; Correlation is significant at the 0.05 level; **Correlation is significant at the 0.01 level; nd no data*

The professional experience is a factor that takes into account the acquired knowledge and skills, and the ability to fully implement them in practice. The current study shows that the most positive impact on economic performance has the factor "professional experience" of the managers - between 16 and 35 years. Here a high correlation coefficient of 0.747 at α=0,01 is reported. The importance of this group of managers is observed in capital firms, in SoleLTD with R=0,823 at α=0,01 and LTD with R=0,680 at α=0,05. Statistically proven is the relationship of managers with experience of up to 15 years, and the profits in the studied farms (R=0,614 at α=0,05). This group of managers deeply influences the economic situation of the ST farms, too, with R=0.796 at α=0,01. The results show that the professional experience is a significant factor only when it is com-

bined with innovative thinking and application of new techniques and technologies in the industry.

The vocational profile of the employed in vegetable farming considers the impact of additional training and professional development of managers on the economic situation of the farms in the sector. Strong relation is reported between managers' knowledge gained from studying abroad and realized profit (R=0,815 at α=0,01). The significance of this factor in the economic situation of the vegetable farms is undoubted in capital companies, too. The correlation coefficient is 0.639 in SoleLTD at α = 0,05, while in the LTD group the relationship has a proven correlation of 0.863 at α=0,01.

Specializing abroad is a factor that has a positive impact on the professional development of managers. They also help to better language learning and effective communication between professionals. In this sense, this present study shows a strong bond between knowledge and ability of the managers to use the language and the economic performance of the farms. Of particular importance is the fluent communication in English (R=0,648 at α=0,05), Russian (R=0,649 at α=0,05) and other languages (R=0,766 at α=0,01). Similar results were obtained in farm groups, according to their economic organizational structure. This is evidence that in order to achieve positive economic results in the vegetable-growing farms, learning and use of foreign languages is essential. This knowledge allows for easy access to international scientific achievements in market gardening. Thus, a constant updating of knowledge managers is ensured. Application of the latest techniques and technologies in production leads to achieving positive economic performance in vegetable-growing farms.

3. Influence of the factors of the “Efficiency of the utilization of employees” group on the economic situation of vegetable growing.

The study of the factors showing the efficiency of the employees covered results in productivity /Table 3/. We analyzed the level of output of acres/BGN, per employee and per man-day in BGN, as well as productivity of the management team in their interaction with the economic performance in the vegetable-growing farms.

The analysis found no statistically proven relation between the factors of this group and the profit realized for the period of study. For the most part, the results show a weak positive correlation between the effectiveness of the use of employees and the economic situation of farms. Average level of significance is accounted only in the factor "Output per diem of the management" in capital companies with correlation coefficients 0.369 and 0.306, respectively.

4. Influence of the group "Work pay and incentives" on the economic situation of vegetable growing.

Good salaries and additional incentives are key factors to retaining skilled professionals and to the development of the economically viable farms in vegetable production. Therefore, we investigate the influence of basic pay, social payments and further incentives to the realized positive economic results for the period (Table 4).

Table 3. Influence of the group " Efficiency of the utilization of employees“ on the economic situation in the vegetable-growing farms

Correlation coefficients / Factors	Total	ST	SLTD	LTD
1. Gross Output from one da /BGN	0,211	0,311	0,196	0,263
2. Gross Output per employee /BGN	0,137	0,098	0,083	0,210
3. Gross Output one diem /BGN	0,141	0,211	0,131	0,193
4. Gross Output one diem of the management /BGN	0,151	0,143	0,369	0,306

Source: Own calculations

Table 4. Influence of the group " Work pay and incentives“ on the economic situation in the vegetable-growing farms

Correlation coefficients / Factors	Total	ST	SLTD	LTD
1. Basic pay and social security of employees in the BGN / Month.	0,907**	0,761**	0,883**	0,931**
2. Social additional payments BGN/ month.	-0,107	0,211	-0,136	-0,088
3. Additional incentives BGN / month	0,695*	0,503	0,801**	0,611*

Source: Own calculations; Correlation is significant at the 0.05 level; **Correlation is significant at the 0.01 level*

The figures show a strong relation between basic pay and the level of profit on farms specialized in the production of vegetables. A statistically proven high correlation coefficient of 0.907 at α=0,01 is reported. This shows the close and indivisible link between the economic interests of individuals on farms and

the economic performance of their activity. Good remuneration stimulates employees in the vegetable-growing farms to gather physical and mental potential to achieve higher economic performance. In this sense, the additional stimulus appears as a reward for being active. Evidence for this is obtained through a high correlation coefficient (R=0,695 at α=0,05) showing strong relation between additional incentives and economic situation of vegetable-growing farms.

As for social payments, the research shows a negative impact of this factor on the economic performance of the farms studied. This negative impact is especially true for companies with share capital.

The analysis reveals the relationship and the strength of the influence of the factors of human resources management on the economic situation of vegetable farms. On the basis of this analysis a combination of factors can be offered, factors having the largest effect on the economic performance of vegetable farms.

Modeling the factors of human resource management, influencing either directly or indirectly the high economic performance in vegetable farming

To study the power of the impact of both direct and indirect connections of the factors of human resource management on the economic situation of the vegetable-growing farms, we implement the method of Path-analysis. This method evaluates only those factors that have the greatest impact on the economic performance, and the less influential are removed. The results of Path-analysis are shown in Table 5.

The data in the table show that some of the factors have positive direct and indirect impact on the economic situation of the vegetable farms. Such factors are assessed as very positive. In vegetable production those are the factors relating to managers aged from 15 to 55, with a professional experience of over 16 years and MA's degree in education, fluent in English and other languages. As strongly positive are outlined the factors related to basic pay and additional work incentives.

Factors relating to the total number of farm managers with professional experience of up to 15 years, specialized overseas and who speak Russian, have a direct positive effect on the economic situation of vegetable-growing farms. Indirect effect of this group of factors on the economic performance, however, is negative.

Table 5. Direct and indirect effects of the factors of human resources management, affecting the economic situation of farms in vegetable

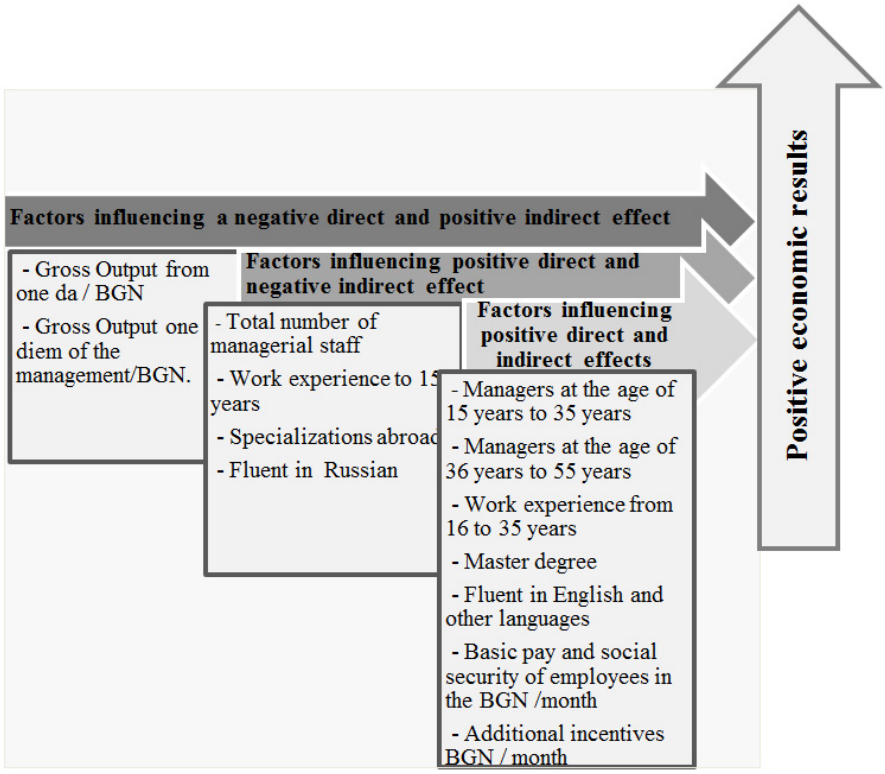
Path-coefficients / Factors	Direct effect	Indirect effect
1. Total number of managerial staff	0,815	-0,063
2. Managers at the age of 15 years to 35 years	0,642	0,197
3. Managers at the age of 36 years to 55 years	0,508	0,169
4. Work experience to 15 years	0,850	-0,236
5. Work experience from 16 to 35 years	0,611	0,235
6. Master degree	0,724	0,164
7. Specializations abroad	1,853	-1,038
8. Fluent in English	0,511	0,137
9. Fluent in Russian	1,788	-1,139
10. Fluent in other languages	0,447	0,319
11. Gross Output from one da / BGN	-0,928	1,139
12. Gross Output one diem of the management/BGN	-0,816	0,967
13. Basic pay and social security of employees in the BGN / Month.	0,639	0,268
14. Additional incentives BGN / month	0,566	0,129

Source: own calculations

The third group of factors that comprise the production of acres/kg and productivity of the management staff have a direct negative impact on the economic performance of vegetable farms. However, the indirect impact of these factors is very positive. The ratio of their indirect effect exceeds that of their direct one and the final impact of these factors is also positive.

Modeling the factors of human resources management, which positively influence the economic situation of the farms, help build a comprehensive system for the selection, training and professional development of managers and employees in vegetable farming (Figure 2).

Figure 2. Model factors of human resource management have a direct and indirect effect on the economic situation of farms in vegetable



Source: own elaboration.

20.4. Conclusions

As a result of the data and the analysis of the influence of the factors of human resource management on the economic situation of farms specialized in the production of vegetables, we can draw the following important conclusions:

An important factor for positive economic results is the optimal number of managerial staff in farms specialized in vegetable production. Periodically updating of the balance between necessary and available workforce will help to optimize the number of managerial and line staff.

Competencies and skills of young professionals are better prospects for economic vitality and development of vegetable-growing farms. The professional ex-

perience is a significant factor only when it is combined with innovative thinking and application of new techniques and technologies in production.

Higher education of managers is a prerequisite for achieving positive results and economic production on farms specialized in the production of vegetables.

Studying abroad as well as fluent foreign languages are factors that have a strong positive impact on the economic situation of vegetable farms.

High payment stimulates the employed in the vegetable-growing farms to mobilize physical and mental potential to achieve higher production and economic results.

Modeling of the factors of human resources management, which positively influence the economic situation of farms, help build a comprehensive system for the selection, training and professional development of managers and employees in vegetable farming.

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21. Change of Productivity in German Dairy Farms

21.1. Introduction

The development and change of productivity, as well as its influencing factors, is of interest in economic research. Analysis is usually done at the global or sector level. An assessment of productivity changes at the micro level is one of the activities of the OECD working group on 'Farm Level Analyses'. While searching for different measurement concepts and programming tools, we gained access to a software package provided by CEPA[47] . The programme allows the calculation of well known productivity indexes, i.e., Laspeyres, Paasche, Fischer, Lowe, Malmquist, Hicks-Moorsteen, and the Färe-Primont Index. However, the free-of charge version used is limited to the calculation of the last mentioned tree indexes. In this study we use this programme for productivity analysis for a balanced sample of dairy farms in the North of Germany. Method and data is briefly described, and then results on productivity changes are explained and compared with income indicators.

21.2. Method and data

The developer of the software package DPIN, O'Donnell [2011], argues that the 'Laspeyres, Paasche, Fisher, Malmquist-hs, Malmquist-it and Hicks-Moorsteen indexes all fail the transitivity test and can generally only be used to make a single binary comparison (i.e., to compare two observations). Only the Lowe and Färe-Primont indexes are economically-ideal in the sense that they satisfy all economically-relevant axioms and tests from index number theory, including an identity axiom and a transitivity test. This means they can be used to make reliable multi-temporal (i.e., many period) and/or multi-lateral (i.e., many firm) comparisons of TFP and efficiency'. A further advantage of the Hicks-Moorsteen and Färe-Primont Index is that prices for input and output are not required, and shadow prices derived from the Linear Programming solution

[47] Centre of Efficiency and Productivity Analysis, School of Economics, University of Queensland (AU)

are used instead. Especially input prices are often lacking at the farm level. As the Lowe index can only be calculated with the professional version, we focus on the Färe-Primont index, which can be calculated with the free-of charge version of DPIN. Although shadow prices cannot be listed by the free-of-charge version, they are internally calculated.

The Färe-Primont defined by O'Donnell [2011] is composed of two indexes developed by Färe and Primont [1995: 36, 38]:

$$TFP_{hs,it} = \frac{D_O(x_0, q_{it}, t_0)}{D_O(x_0, q_{hs}, t_0)} \frac{D_I(x_{hs}, q_0, t_0)}{D_I(x_{it}, q_0, t_0)}$$

'The Färe-Primont TFP index is quite general in the sense that it doesn't require any restrictions on the production technology apart from those that might be necessary for the distance functions to be well-defined' [O'Donnell, 2011]. The calculation of this index is calculated in following steps:

- Calculation of output and input distance functions in solving LP's

$$D_O(x_0, q_0, t_0)^{-1} = \min_{\gamma,\beta} \{\gamma + x_0'\beta : \gamma\iota + X'\beta \geq Q'\alpha; q_0'\alpha = 1; \alpha \geq 0; \beta \geq 0\} \qquad \text{(Färe-Primont)}$$

$$D_I(x_0, q_0, t_0)^{-1} = \max_{\phi,\delta,\eta} \{q_0'\phi - \delta : Q'\phi \leq \delta\iota + X'\eta; x_0'\eta = 1; \phi \geq 0; \eta \geq 0\} \qquad \text{(Färe-Primont)}$$

- Calculation of aggregate output and inputs

$$Q_{it} = (q_{it}'\alpha_0)/(\gamma_0 + x_0'\beta_0) \qquad \text{(Färe-Primont)} \quad \text{and}$$

$$X_{it} = (x_{it}'\eta_0)/(q_0'\phi_0 - \delta_0) \qquad \text{(Färe-Primont)}$$

- Calculation of shadow prices

$$p_0^* = \partial D_O(x_0, q_0, t_0)/\partial q_0 = \alpha/(\gamma + x_0'\beta) \qquad \text{and}$$
$$w_0^* = \partial D_I(x_0, q_0, t_0)/\partial x_0 = \eta/(q_0'\phi - \delta).$$

Limitations of this index are:

- It is calculated referring to a reference farm (to be defined) in the base period. In the following we alternatively recalculate the indexes for the remaining farms.
- The model only solves with rescaled data, which might influence the results. An alternative solution would be to exclude outlying observations. As we already dropped outlying observations, we didn't go forward in this direction.

- Shadow prices are handled as 'black box'. Results might be biased by zero values. This aspect could only be proved with the professional version of DPIN.
- The number of observations is limited to 5000, which might be not enough in running the model for all dairy farms in Germany. With the underlying sample the limit is only extended by half.
- Weighting of observation, which is usual in using representative farms, is not possible in the model.

After first tests with a sample of 40 farms we selected a balanced sample of 170 dairy farms for 15 periods (1996/97 – 2010/11) from the national FADN. Farms are located in the North of Germany (Lower Saxony and Schleswig Holstein). Only farms with more than 30 dairy cows in 2009/10 and with milk production in each period are included. Furthermore, a few observations with outlying data are excluded. For the model we used a rather aggregated set of variables;

- 3 outputs: milk (€), other returns (€), subsidies (€)[48]
- 5 inputs: variable input of crop production (€), livestock (€), other costs (€, excl. land rentals and hired labour costs); UAA (ha), AWU

For further differentiation of results we use tree size classes (dairy cows): 1: 30-60; 2: 60-100; 3: > 100 and we included income indicators for the comparison of productivity development. Box plots are processed to summarize and to show the variation of results.

21.3. Results

In this chapter we show first results for one farm taken as example. Then we describe changes of productivity for groups of individual farms as well as the variation by farm size. Lastly, we compare these results with the development of income usually taken as main indicator for economic performance.

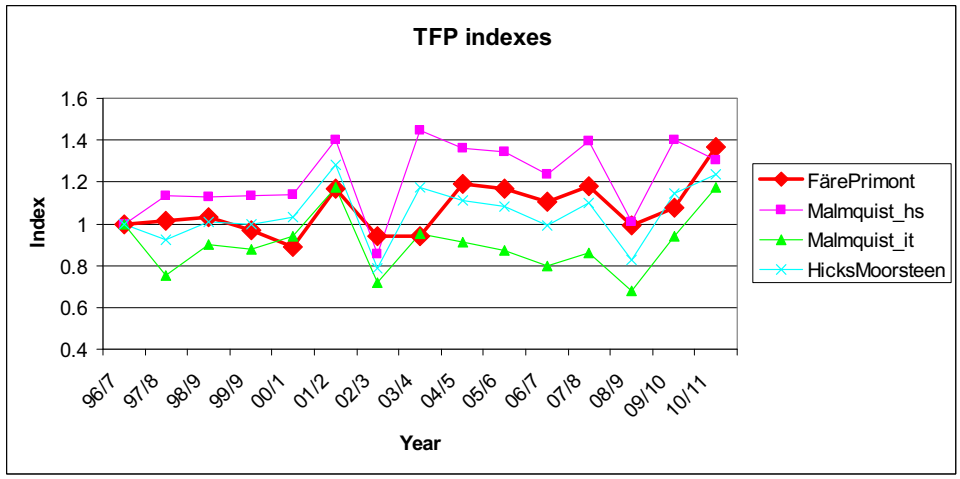
[48] Against common practise we included subsidies as output in the model. This seems to be reasonable for the underlying long period of 15 years, with price protection at the beginning and the milk market reform since 2003 with a stepwise reduction of milk prices and introduction of milk premia, which have been decoupled since 2005. For a test sample we run the model without subsidies, too. Although productivity indexes became lower in the last period, the difference was rather low. Therefore we don't include this option in this paper.

21.3.1. Development of productivity referring to a reference farm

The underlying farm (ID=10) has been taken as reference in the calculation of Färe-Primont index. Figure 1 shows the development (change) of productivity (dTFP) over the 15 year period, taking 1996/97 as reference. It is rather constant in the first three years, then moves down to 0.89 in 2000/01, which might be an effect of the BSE crisis. It moved up to around 1.17 in 2001/02 and 2004/5 to 2007/8. Periods with negative productivity change (< 1) were in 2002/3 and the following year, as well in 2008/9. The highest level was reached in 2010/11. Therefore productivity increased by 0.37 during this 15-year period. Change of this index is the result of change of aggregated output referring to aggregated input. A high level of aggregated output is a sign for rather high milk prices.

Beside these indicators the model also calculates other economic measures, of which only changes of technical efficiency (dTech), changes of output-oriented technical efficiency (dOTE) and change of output-oriented scale mix efficiency (dOSME) are shown. dOTE is restricted to 1; it is less than 1 in the first periods indicating a low output-oriented efficiency change. Development of dOTE and dOSME are related to dTFP, but with time lags and reaching lower levels in 2010/11.

Figure 1. Change of productivity (dTFP) in 1996-2011
(1996/97 =1)

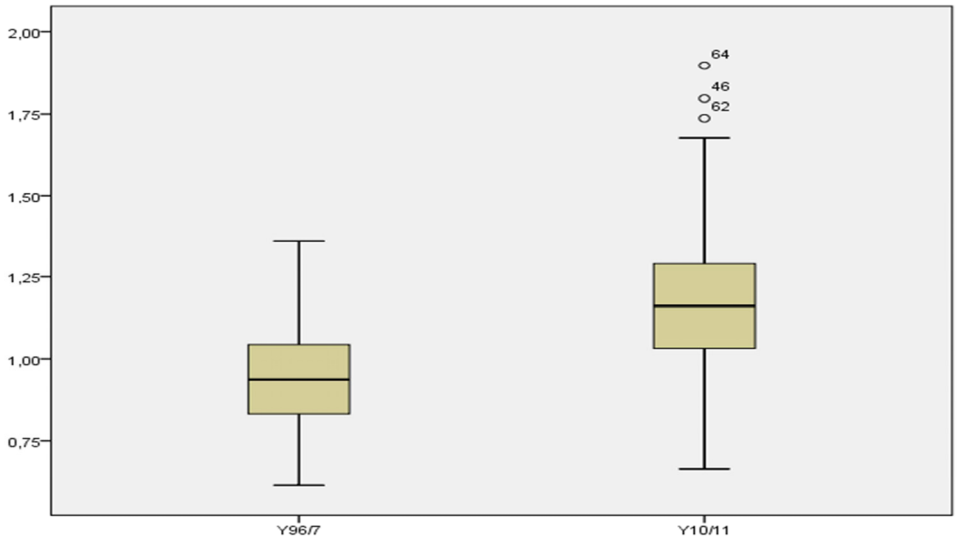


To get insights in the variation of different TFP indices we also calculate Hicks-Moorsteen and Malmquist-hs (it) indices. All indexes show a strong drop

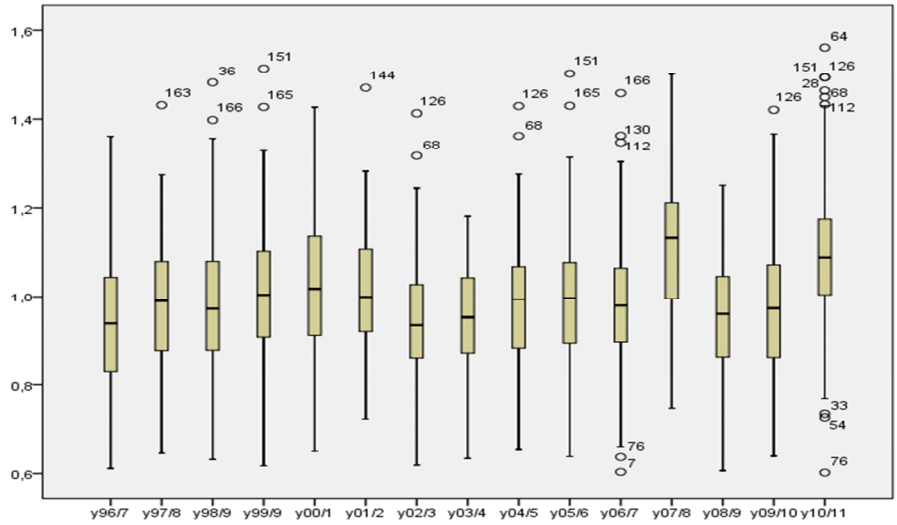
in 2002/3 and 2008/9. Development and level of the Hicks-Moorsteen index is similar to Färe-Primont, while the Malmquist index differs between the firm specific (-hs) and the period specific (-it). The selection of an appropriate index is therefore a challenge.

21.3.2 Variation of TFP

At first we discuss non-standardized FP indexes. The box plot in Figure 2 shows the level median and variation (50% of farms between 1st and 3rd Quartile, as well as minimum and maximum TFP's and so called outliers (o) and extreme values (*). In 1996/7 the median is less than 1 (referring to the reference farm, 50 % of farms shows TFP's between 0.85 and 1.1; TFP varies between 0.6 and 1.4. TFP in 2010/11 increased to about 1.15 (Median). 50% of farms show TFP form 1.05 to 1.3 and the spread between min and max becomes larger; furthermore a few outliers are indicated. This shows a positive development of TFP.



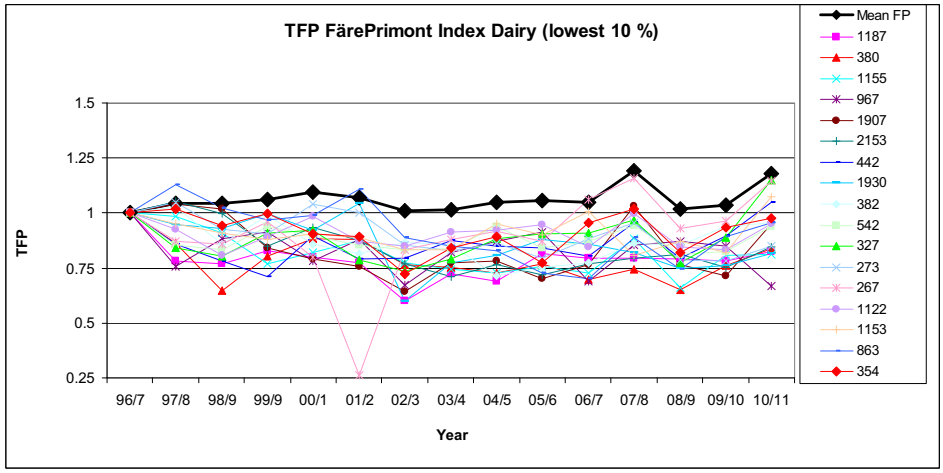
Development of TFP over the whole period is shown in Figure 4. TFP successively increased until 2000/01, followed by a period of lower productivity until 2006/7. Highest TFP was reached in 2007/8 due to favourable price levels especially for arable crops. In 2008/9 - the economic crisis - TFP was even lower than in the first period. TFP moved up in 2010/11 to almost the same level as in 2007/8.



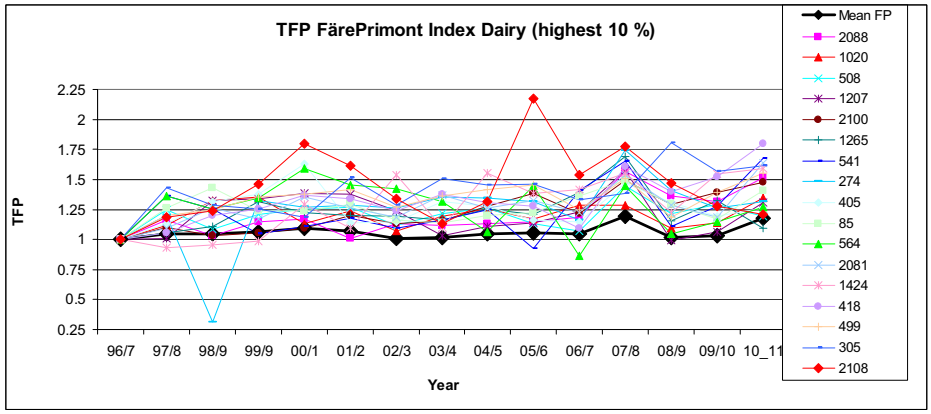
21.3.3 Variation of standardized TFP

As mentioned above, the Färe-Primont is expressed for all periods and farms referring to the first period of the reference farm (ID=10). Annex table gives an example of farm (10) and (71). With regard to the reference farm, Farm 71, productivity is only 0.81 in the first period and 0.97 in the last period. For the comparison of farms we standardize TFP's =1 in Period 1. Therefore the TFP of Farm 71 moves to 1 in Period 1 and to 1.21 in Period 15. The change of productivity over the whole period is therefore lower than of the reference farm, although TFP indicators were higher in the first period.

Figure 5 shows the development of TFP (F-P) for the 10 % of farms with lowest average TFP – in comparison to average TFP. Average change of TFP is less than those of the reference farm; it is rather low until 2006/7, rising to 1.2 in 2007/8 and 2010/11 under conditions of high milk prices. Most farms included show less than average TFP indices and some less than 1, indicating a negative development of productivity.



The situation is much better in the 10 % of farms with highest TFP (Figure 6). TFP increase to about 1.2 until 1999/2000 and stay at this level until 2006/7. It significantly increased in 2007/8. Beside this trend there is a significant variation between farms with some extreme values on a positive and negative direction.



The development and variation of standardized TFP between all sample farms is shown in Figure 7. Due to standardization TFP becomes 1 in the first period. The general trend of TFP is similar to Figure 5 but with a slightly higher level. TFP was highest in 2007/8; nevertheless there were farms with TFP less than 1.

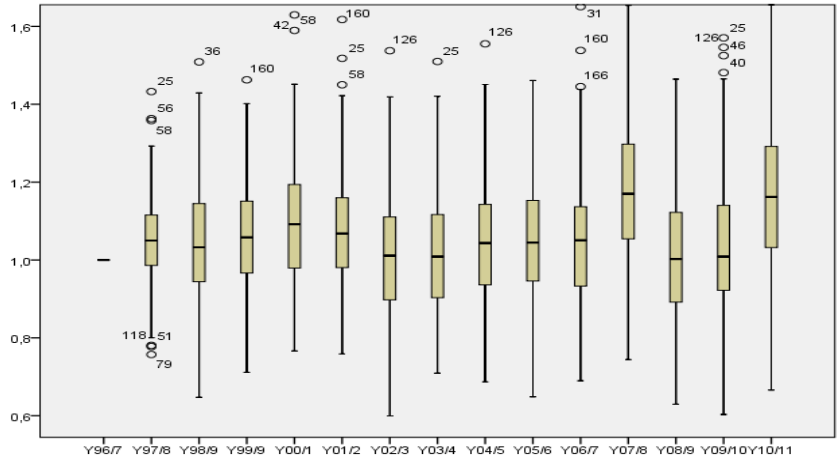
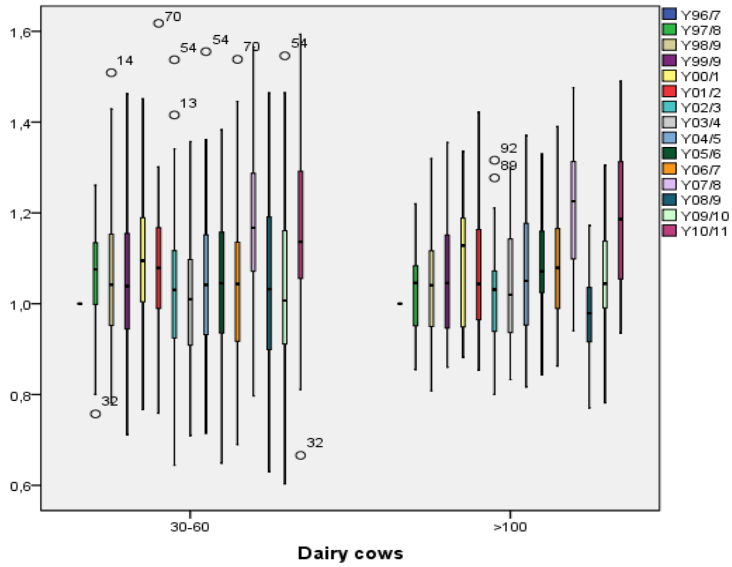


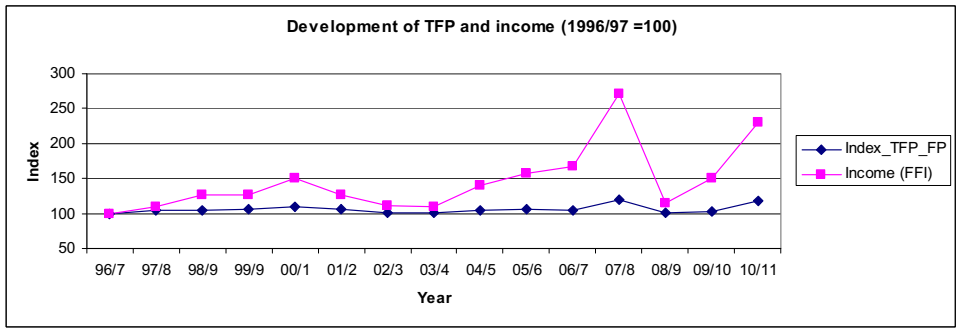
Figure 8 shows the development and variation between small (30-60 dairy cows) and large (> 100) farms. The picture looks similar in most years but with a slightly higher level of the large farms. However, there are a few differences:

- The variation of TFP between min and max is higher in small farms
- TFP of large farms is more sensitive wrt price changes; in the year of crisis (2008/9) the TFP level on average was considerably lower than in small farms.

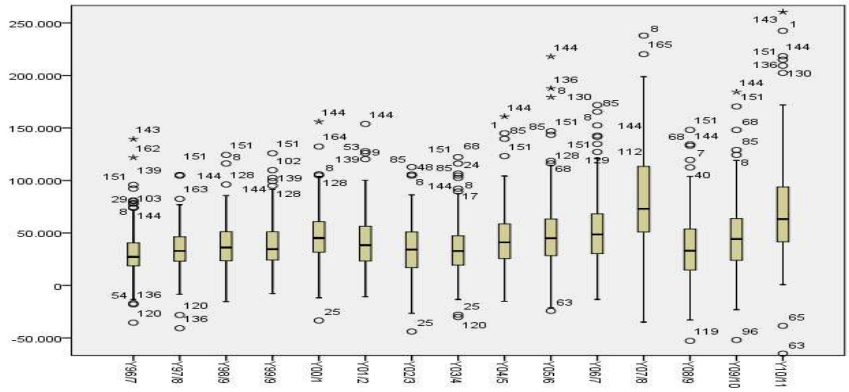


21.3.4 Comparison with income

Income is the most used economic indicator. In the following we use Family Farm Income (FFI) expressed in € per farm as income indicator. Figure 9 compares the development of TFP and FFI relative to the base year (=100). As already mentioned, changes of TFP are rather low; in most of the years it is close to 1 and only in 2007/8 and 2010/11 does it move up to around 120. The development of FFI is more significant; it increases to 150 in 2000/1, and then goes down to near 100 in 2003/4 and the succeeding year. In 2007/8 it switches to its highest level of 270. In the year of crisis (2008/9) it drops again to close to 100. It recovers to 230 in 2010/11. This indicates that the variation is much higher than the development of TFP.



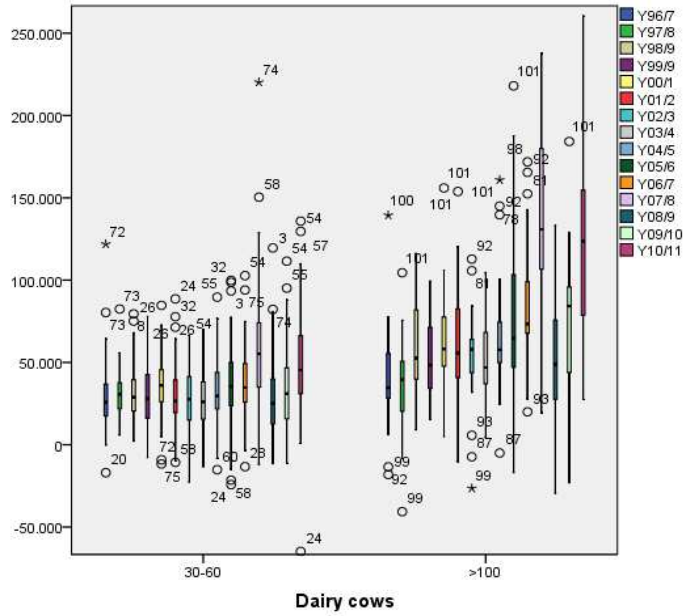
Absolute levels of FFI and its variation for all farms are given in Figure 10. Income in 50 % of farms (between Q3 and Q1) was less than 50 Tsd € in the first 4 years. A first high was reached in 2000/1, and it then fell again in the following 3 years. It reached 2000/1 levels in the years 2004/5 to 2006/7. The highest level was reached in 2007/8 with 50 Tsd to 100 Tsd. €.



Farm size has a significant impact on the income level; Figure 11 compares FFI for small and large farms. In the group of small farms (30-60 dairy cows) FFI in 50% of farms (between Q3 and Q3) was less than 50 Tsd € in all years; only in 2007/8 and 2010/11 did it increase significantly. For the large farms (> 100 dairy cows) a significant share reached income levels > 50 Tsd € in ten years. Income almost doubled in 2007/8 or increased by two-thirds in 2010/11. However, the overall variation of income is larger than in small farms. It is also of interest to look at the so-called outliers (o) or extreme values (*):

- Farm 99 had negative incomes in 3 years
- On the other hand, Farm 101 reached its highest income levels in 6 years.

It would be of interest to analyse causes for high income levels, but this is out of the scope of this paper.



21.4 Conclusions

The changes of TFP (F-P) are rather low. In about half of the years TFP it is close to 1, while it increased significantly in years of favourable milk prices (2007/8 and 2010/11). The rather low changes of TFP can be explained by the milk quota system which limits farm growth. Another factor is the implementation of the milk market reform since 2003.

As is well known, there is a significant spread of TFP (and income) between farms. Farms of the lowest decile show TFP levels less than 1, indicating negative TFP growth. Farms belonging to the upper decile show TFP levels greater than 1 up to a maximum of 1.5.

The development of income is more pronounced than TPF changes. Income was rather low but more stable until 2006/7. It became rather volatile in the succeeding years with the highest level in 2007/8, mainly determined by favourable milk prices.

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Annex

Specification	Reference farm		Standardisation to base year	
Farm ID	***(10)***	***(71)***	***(10)***	***(71)***
Year				
96/7	1.00	0.80	1.00	1.00
97/8	1.02	0.95	1.02	1.18
98/9	1.03	0.94	1.03	1.18
99/9	0.97	0.86	0.97	1.08
00/1	0.89	1.09	0.89	1.36
01/2	1.17	0.91	1.17	1.14
02/3	0.94	0.85	0.94	1.06
03/4	0.94	0.81	0.94	1.02
04/5	1.19	0.91	1.19	1.13
05/6	1.17	0.92	1.17	1.15
06/7	1.11	0.86	1.11	1.07
07/8	1.18	1.14	1.18	1.42
08/9	0.99	0.96	0.99	1.19
09/10	1.08	0.84	1.08	1.04
10/11	1.37	0.97	1.37	1.21

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22. Structural and market changes in the Hungarian fruit industry

22.1. Introduction

Nowadays the demand of fruit is increasing globally because of their dietetic possibility; therefore the production of functional foods has become more important. The juices and foods with high fruit content are in high demand with customers. According to the FAO Statistical Yearbook of 2010 world fruit production was 470 million tons in 2000, and it increased to 587 million tons in 2009. However, not all fruit categories show an increasing trend. For example, fresh fruit consumption has seen a significant growth in the past few years, while consumption of canned fruits and frozen fruits has declined during the same period. Fruit juice and juice drink consumption has remained flat [Abate and Peterson 2005]. While globally fruit production is increasing, the Hungarian production breaks from this trend.

Hungary has relatively favourable ecological conditions for producing fruit and vegetables, but it is not able to fully exploit this opportunity. During the last two decades, the fruit and vegetable sector has faced several new challenges such as the change of political system, accession to the EU and the effects of globalisation, and it has been unable to adapt itself to these challenges [Erdészné et al. 2009]. The transformation of Hungarian agriculture has still not been completed; the country's position cannot be compared to the EU-15 countries. Hungary has competitive disadvantages inherited from the past that have become even more apparent in the more intense market competition following the accession [Popp and Potori 2006]. EU accession created a new situation in the horticultural sectors. The single market, through abolition of customs protection, has contributed to the inflow of imported products, thus creating more competition in the domestic market [Erdészné et al. 2009]. The rapidly changing market demands cause serious problem for Hungarian producers, because they make difficult to decide and plan.

This paper aims to introduce the structural changes in the fruit sector of Hungary during the past few years, while emphasizing the weaknesses and possibilities.

22.2. Characteristics of the Hungarian fruit industry

The horticultural sectors represent a small share of agriculture. On the other hand their importance is greater, if their contributions to gross value of production, the agricultural trade balance and their role in employment are considered. The fruit industry's share of employment in agriculture is 4.5 percent. The Hungarian agricultural output was 7.6 billion EUR in 2011, 3.3 percent of it was fresh fruit, and 1.2 percent was grapes.

In Hungary the total agricultural area is 5.3 million hectares, from which fruit orchards occupy 92 thousand hectares (1.7 percent), and total grape (including vineyard) areas occupy 81 thousand hectares (1.5 percent) in 2012. After socialism, the cultivated areas have decreased constantly. Several reasons account for this. The restitution process was delayed, therefore the number of wastelands have increased. The landowners and land users had become a separate person often; many people got land, which were unable or unwilling to cultivate it. The unfavourable market conditions and the depressed producer prices caused reduced reinvestment. This decrease continued after joining the EU. Comparing the 2003 and 2010 years, it shows that the number of farms decreased, which meant the reduction of 20 thousand hectares of fruit plantations (Table 1.). The main reasons for decline are the lack of capital, services and support.

The small-sized farms are predominate in the Hungarian fruit sector, 35.6 percent of the orchards are less than 5 hectares. The fruit sector was broken into two large groups: there are the capital-intensive agricultural holdings, which have developed and advanced cultivations. On the other hand there are the poorer smaller farms, which have old cultivations. In case of some species the establishment of new plantations was conditioned to a 100 or 200 percent cutting by decree. The purpose of this was the liquidation of old cultivations in poor condition. Capital-intensive farms cannot cut them down because they have new modern plantations. Small-sized farms cannot replant because of the lack of capital. The cutting for cultivation and planting are not conditional upon each other.

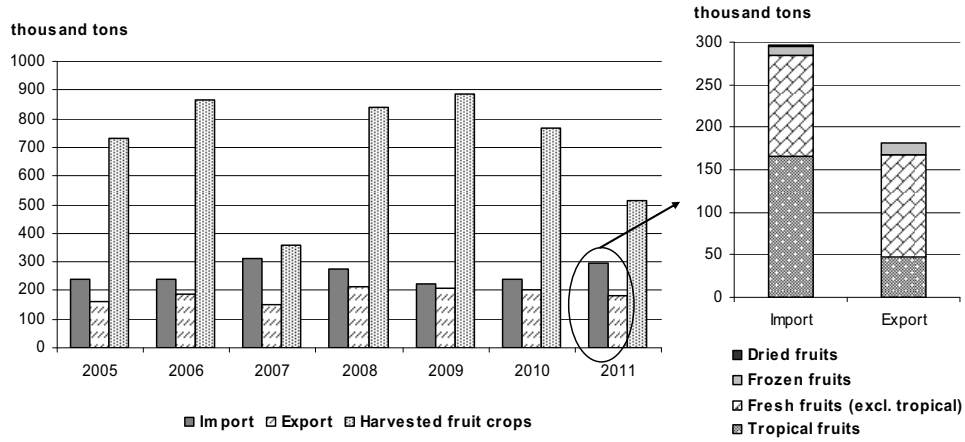
Table 1. Fruit farm structure changes in Hungary (2003 vs. 2010)

2003				**2010**			
Size (hectare)	**Number of farms**	**Area of orchards (hectares)**	**(%)**	**Size (hectare)**	**Number of farms**	**Area orchards (hectares)**	**(%)**
< 1	105499	21098	21.0	< 1	88832	13471	16.1
1 - 2	5602	7800	7.7	1 - 2	4470	5581	6.7
2 - 5	4332	13660	13.5	2 - 5	3855	11006	13.1
5 - 10	1636	11428	11.3	5 - 10	1722	10734	12.8
10 - 20	936	12820	12.7	10 - 20	975	12054	14.4
20 - 30	264	6388	6.3	20 - 30	320	6507	7.8
30+	360	27791	27.5	30+	416	24416	29.1
Total	**120129**	**104723**	**100**	**Total**	**100590**	**83769**	**100**

Source: Hungarian Central Statistical Office

Despite fruit production areas having been decreased, productivity is stable (Figure 1.). This is because crops and technologies have improved. The production rates were similar in recent years, except in 2007 and 2011. In 2007 the winter temperature was very low. Then many nights were measured between -6 and-8°C in late April and early May, it was cold for a long duration, there were no clouds and wind. Consequently due to the spring frost 90 percent of fruit production was dead in Hungary. Similarly, 2011 was a bad year also. A cold front passed over Hungary on the 3rd of May, behind it an arctic air mass moved into the country. The cold air flow was accompanied by strong gusty wind throughout the country. On the night between the 5 and 6 of May the wind stopped, the temperature dropped significantly fast in dry air and a windless dawn under a cloudless sky. Next morning was measured between -7 and -8°C. Due to the lack of precipitation during the summer the fruit quality was worse. In the past few years the imports were similar, except in 2007 and 2011 due to above causes. Similarly in 2007 and 2011 the export volume changed. Generally the main export products are fresh fruits, such as the apple, sour cherries and plum. One part of export is re-exported, these are tropical fruits. The least part of export is frozen fruits, mainly sour cherries, plums and berries. The main import goods are tropical fruits (banana, orange and tangerine). The fresh fruits (excl. tropical) are the second highest volume of imports; these are mainly apple, pear, peach and strawberry. The third highest is frozen fruit. The main frozen fruits, which are imported, are strawberries, second are sour cherries and third are raspberries. In the last place would be dried fruits.

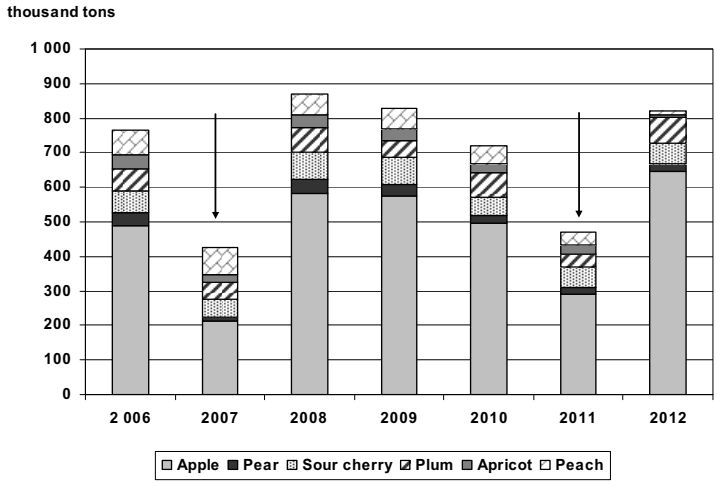
Figure 1. Changes of the harvested fruit crops, export and import in Hungary



Source: Hungarian Central Statistical Office.

As for the structure of export markets, we can conclude that the exports of almost all products are concentrated on 2-3 foreign markets. The reason for this is that Hungarian production is expensive and the yields are only moderate. It is necessary to adapt production to market demands as has happened in the apricot supply chain. The production development is limited by the lack of capital and services – except for the production of walnuts, which is well-mechanized – and moreover by the lack of qualified, reliable labour [Radóczné Kocsis 2012].

Figure 2. Production of the most important fruits in Hungary



** Estimated data*
Source: Hungarian Central Statistical Office.

Production of the most important fruits in Hungary is illustrated in Figure 2. Apples are produced in the largest amount. Sour cherries, plums and peaches are produced in similar amounts, pears and apricots are less. The production of fruits was similar, except in 2007 and 2011. For example in 2011 apple production was half of what it was in earlier years.

Because of the old big ratio of old orchards and lack of irrigation systems the territorial efficiency of Hungarian fruit production does not reach the level. The freeze protection equipment is not realized in the new plantation due to the lack of capital and tender supports.

22.3. International factors

The food markets are more and more concentrated and internationalized; therefore the quality assurance and traceability have increased significantly. Food safety requirements are demanded for fresh products (fruits and vegetables). However the traceability and inspection in developed countries are higher than in developing countries [Ahmad and Fehér 2010]. Importance of food safety and traceability is a global demand, especially because of the latest food scandals (e.g. relabeling, adulteration). The fruit market is expanding with new products and new varieties beyond the main fruit categories and fruit-containing products. This demand is a new strategy for growers and manufacturers. In Hungary, post harvest technologies and cooling are incomplete. The smaller growers cannot cool the fruits after harvesting, if they are not a member of a cooperative. Without cooling the fruit faces a lower reduction in quality. Fresh fruit cannot be stored for long periods, so they can sell their products to local markets. The other problem is the insufficient processing industry in Hungary. Environmental protection become more and more important, the challenge is help minimize the environmental impact of agricultural activities. Environmental problems in agriculture have proven difficult due to the spatial heterogeneity and temporal variability of agriculture. Agriculture intensification affects to the biodiversity [Hamuda and Patkó 2010]. This is true especially in horticulture. There are varied cultures and technologies, and the farm structures are diverse. Climate change causes modifications to technologies, necessary to use protect system against the storms, hails and droughts. The food chain is globally, therefore the transporting become more and more, which is also impact on the environment.

22.4. Problems in Hungarian agriculture

Sudden changes in the supply and demand serious problem to Hungarian growers. Inflow of import goods causes oversupply and depressed prices. Start of season can shift due to unpredictable weather conditions; therefore the fruit ripening can slide because of the short season period. This situation results in market disruption. Other problem is the heterogenic goods. Fragmented farm structure characterizes the Hungarian fruit and vegetable sector. Where are not producer' organisations (POs); there the sale is disorganised. 18 percent of sales of domestic fruits and vegetables are happened by POs; however 40 percent would be adequate. This low ratio is because the black market and lack of trust between the producers and traders, as well as between producers and producers.
Based on past experienced from eight of ten years are drought in Hungary [Central Bureau of Water and Environment 2013]. Drought affected area may exceed 80 percent in severe cases (e.g. in 2007 and 2012). According to data of Hungarian Central Statistical Office the ratio of irrigated and water rights permit areas are low in Hungary. Only 6 thousand hectares were irrigated from total fruit growing areas in 2012. Apples are irrigated on the largest areas. The main reasons of low ratio are high electricity costs, bureaucracy and the lack of modern irrigation systems. Renewal of dated equipments or acquisition of up-to-date effective sprinkler systems exceeds the financial possibilities of farmers. Safeguarding is difficult; it affects the irrigation equipments and the crops also.

In the most important fruit and vegetable growing areas there is inadequate seasonal agricultural and skilled labour in spite of the double-digit unemployment rate. The lack of seasonal and skilled labour may be due to the system of social assistance and the decline in agricultural vocational training. The farmers are aging, there is not enough replacement. Moreover in this sector the wages are very low due to its low profitability. The wages in agriculture are only 75 percent of the national average.

Lack of innovation is a huge problem. Although there is no shortage of consultants and skilled researchers, but the research support tools and resources do not exist.

22.5. Possibilities in Hungarian fruit sector

The future of the fruit sectors depends on the capability of the growers to produce high quality marketable products through the utilization of professional technologies. The most important element of development of fruit sectors the

reconstruction of orchards. At present in Hungary the number of old orchards is huge, and in these orchards the quality of crops is weak. Possibilities lie in the cultivation modernization. More intensive cultivars and technologies are required for higher and more crops and for better quality, therefore co-ordination of the raw material production, for example through input financing and common mechanized harvesting, is indispensable.

Consumption of fresh fruits increased during last few years, but demand of canning and freezing products has dropped. The Hungarian processing industry is not sufficiently competitive in these products, including the convenience goods (e.g washed, cut-up fruits). Demand of organic fruits increased with health awareness. The development resources should be principally targeted to this area in order to satisfy domestic demand, restrict imports and expand exports. The farmers markets are increasingly successful in population. Customers like to know, that the products stem from surrounding rural. Organised marketing programs to promote the consumption are necessary, for example the 'School fruit and vegetable nutritional program' or 'Eat 3×3 fruits and vegetables a day' program. Promotion of the excellent flavour and quality of Hungarian fruits could be a high priority of the domestic campaigns. The demand of consumers for safe and high quality products is increasing worldwide. Several growers cannot assume the costs of quality assurance. State supports of it would provide efficient assistance.

Horticulture plays an important role in the employment of rural population. In Hungary the vegetable and fruit sectors pick up a living and additional source of income to thousands families. The two sectors share 10-12 percent in agricultural production. The sector needs high demand for manual labour. The "Way to Work" program started on 1 January 2009, which promotes the employment instead of social assistance. It may contribute to the mitigation of the labour shortage in horticulture. In particular, in those counties should be encouraged and developed the fruit growing, which are traditional grower areas. There are favourable environmental conditions, horticultural skilled labour and the processing industry is built or could be restartable. The sector can contribute to 10-11 months of employment in 25-30 percent, and further 4-8 months of employment (65-70 percent) in small and medium-size enterprises.

The young researchers are skilled and have professional calling. At present the state does not provide sufficient resources for breeding and for evaluating. Research background is required to develop. Similarly consulting network needs to be built with specialists.

The increasing popularity of produce grown through reduced utilisation of chemicals (organic and integrated production) may give better market opportu-

nities for producers in both the international and domestic markets. This requires the presentation of the production technologies, training and professional consulting, development of the processing industry and trade through the entire food chain and, in the case of integrated production, implementation of a proper labelling system, as well as education of the consumers.

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23. Social and economic assumptions of employment increase in fruit and vegetable sector of Slovakia

For more than decade the production of fruit and vegetables of temperate climatic zone is decreasing in Slovakia. On the other hand the import and concurrently the unemployment rate grew significantly. Article provided the analysis of current situation at Slovak fruit and vegetable market mainly focusing on supply side (production, import) and use of production capacities. It identified major problems in the sector and strives to find out solutions in order to improve current unfavorable condition. One of serious aim is to highlight on unused production and labor capacities and by improvement of these factors to decrease unemployed in rural areas of Slovakia. Through comparison of average consumption and domestic production of fruits and vegetables it was calculated the amount to gain again self-sufficiency in both commodity groups and especially labour force necessity to produce such amount.

23.1. Introduction

There has long been a lack of jobs, a significant regional differentiation in the supply of jobs, lack of capital and lack of economic and technical knowledge of people to start their own business in the Slovak countryside. In the past, the largest employer of the active population in countryside was agricultural sector. Around 360 thousand people worked in agriculture before 1990. Almost every village had a farm, which provided employment to the local population.

Agriculture employed 360.7 thousand people in 1989 and it was 160.4 thousand employees in 1994. Ten years later the number of employed people in agriculture decreased in 86.6 thousand and in first half of 2012 the agricultural sector had 75.9 thousand workers. Employment in the agricultural sector at the end of 2011 was less than a quarter of the number of manpower in 1989.

The reasons for the significant decrease of workers in agriculture are reduction of agricultural production by almost 40 % compared to 1990, the substitution of manpower by efficient agricultural technology and disinterest of em-

ployers for low-skilled workers. There has not realized economic restructuring in countryside yet, which would create alternative jobs. There was a decrease in the number of employees in the food industry, where it is possible to observe a lack of utilization of the available production capacity. Trend of reducing of employment in agriculture is not probably stopped. In view of the specificity of this manpower, migration rigidity (inelasticity of the labour market) and low retraining flexibility of agricultural workers is their integration into the working process and finding of substitute employment opportunities very difficult. Furthermore, if the decline of average wages in agriculture will continue, we can expect the loss of work motivation of some people and their favour of the combination of unemployment pay, respectively social benefits with extension activities of subsistence economy. In 2011 the average wage in agriculture was 612 €, it was 22 % less than the average wage in the national economy. Lower wages were reported only in the construction and food services, but they have their own particularities and income of workers is in reality much higher.

The paradox of whole situation is sharp increase in imports of agricultural commodities and food on the Slovak market in recent years. Foreign trade in agri-food commodities has a growing negative balance, while Slovakia disposes of untapped labour potential and suitable soil and production conditions to ensure food self-sufficiency of many food types of temperate zone crops and products of livestock production. In addition to increasing of agricultural production it will be needed to increase the proportion of domestic processing products, which would be positively reflected in the increase in value added, in the creation of jobs, in the increase in sale of domestic food products, in stabilization of regional markets and last but not least in improving the quality of life in countryside.

23.2. Methodology

The aim was to detect a number of new jobs needed to fully cover consumption of fruits and vegetables by domestic production. For comparison domestic supply with domestic demand it was used data from the Statistical Office of the Slovak Republic and Ministry of Agriculture and Rural Development of the Slovak Republic. Since Accession to the European Union average annual vegetable production in Slovakia was 330 000 tons and consumption was by approximately 40 000 tons higher. Similarly fruit production of mild climate zone represented around 61 000 tons per year but consumption is around 110 000 tons. By made a simple comparison of average annual consumption need of

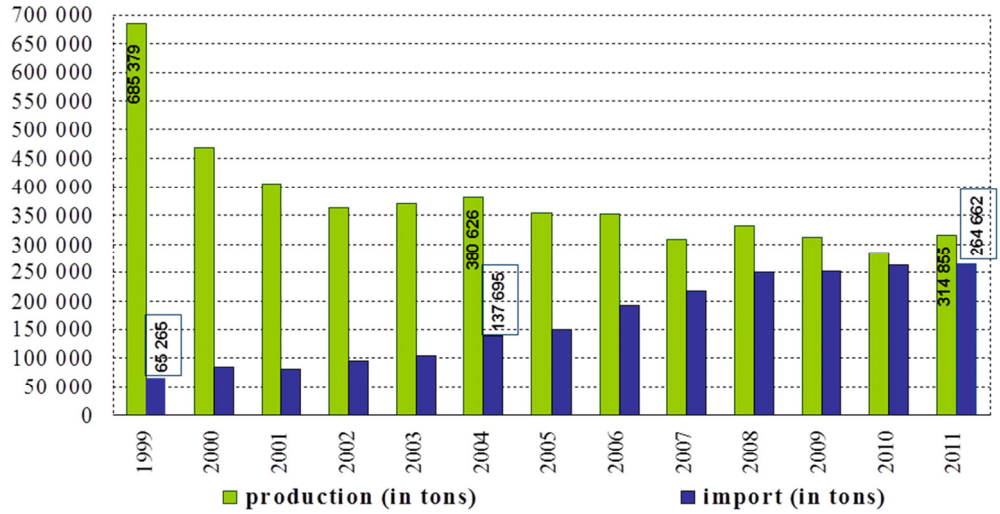
fruits and vegetables and real national production and through average hectare yield it was calculated the needed harvested area to cover consumption by domestic resources. Taking into consideration actual common need of employees per hectare it was calculated number of prospective jobs that could be created in vegetable and fruit sector. Additional acreage of crops would fully eliminate the imported volume of fruits and vegetables. The result would be a positive trade balance in natural as well as in financial expression. For vegetables, the largest increase in crop areas would be necessary in onion, garlic, cauliflower, cabbage, carrots, potatoes, capsicums and especially in dry legumes, for fruits is mainly about peaches, apples, pears, apricots, cherries, plums, walnuts and small fruits (strawberries, raspberries, blueberries, black and white currants, gooseberries).

23.3. Results

Farms, which deal in growing fruit and vegetables, they have in long-run optimized their production range and their cost factors mainly intensification but also labour cost in order to achieve more favourable economic results. Investment activities in the Rural Development Program in previous years had contributed to the recovery of material-technical base and production efficiency, but also reflected in the saving of manpower, thus in decrease in employment in the agricultural sector.

Fruits and vegetables are irreplaceable component in human nutrition. Production value of fresh vegetables expressed in basic prices reached 132.1 millions EUR in 2011 that is 6.1% of total agricultural output in Slovakia. Before EU-Accession this share was higher by 2%. Since 2004 the annual consumption of all kind of fresh vegetables ranges 348–406 thousand tons, e.g. average 75 kilograms per capita. However domestic vegetables production (around 330 thousands tons) do not cover demand at all. Nowadays around 45% of fresh vegetables and food products containing vegetables are imported (Figure 1). It has to be noted that import of vegetables and vegetable products on Slovak market is in reality higher as small importers do not prove imported volume up to 200 thousands customs value in given fiscal year.

Figure 1. Domestic production of fresh vegetables and import of fresh vegetables and processed vegetable products to Slovak Republic



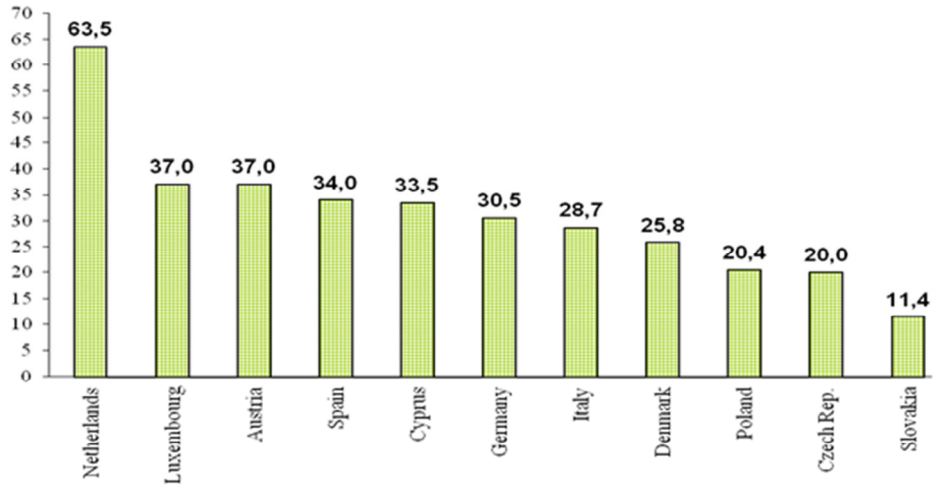
Source: Statistical Office of the Slovak Republic

In the year 2011 domestic vegetables production was lower by 54.1% and acreage was smaller by 35.3% compared to 1999 [Meravá 2012]. Compared to Pre-Accession period production of vegetables decreased by 14.6 % and harvested area by 12.1% as a lot of Slovak growers abandoned approved growing techniques or stopped to grow vegetables due to enormous economic pressure. On the other hand the import of vegetables rose by 155.3% compared to the year 2003 and triple compared to 1999. More than 80% of all cultivated vegetables comprise just 9 varieties although there were successfully tested 50 varieties in Slovak soil and climate conditions. There are a lot of further reasons that caused harvested area and vegetable production decline from year to year.

1. Lower productivity and subsequently profitability of production (Figure 2);
2. Significant financial deficiency in investment needs (drip irrigation systems, bird nets);
3. Higher farm gate prices compared to large foreign competitors;
4. Growing import (including varieties resistant to spoiling, drying, rotting etc.);
5. High energy-intensity and labor intensity of production;
6. Lower support of growers compared to farmers in old EU Member States;
7. Low reliability to ensure large vegetable deliveries of equal quality for retail sector during whole marketing year;

8. Weaker bargaining power of growers towards large food processors and retail chains (Table 1);
9. Existence of few producer groups in vegetable sector;
10. Lack of large domestic vegetable processors;
11. Raising of land tax;
12. Instability of plant breeding and low rate of research/development results application into practice;
13. Limited assortment of planted vegetable varieties (just 9 comprise more than 80 % of the supply although it was tested and assessed as suitable for growing more than 50 types of vegetable).

Figure 2. Average yield of vegetables per hectare in Slovak Republic and in selected EU countries in 2010 (in tons)



Source: Eurostat

According to survey conducted by Ministry of Agriculture and Rural Development of the Slovak Republic the share of many vegetable and fruit products produced by domestic food industry is low within Slovak retail chain and situation worsened for last couple of years.

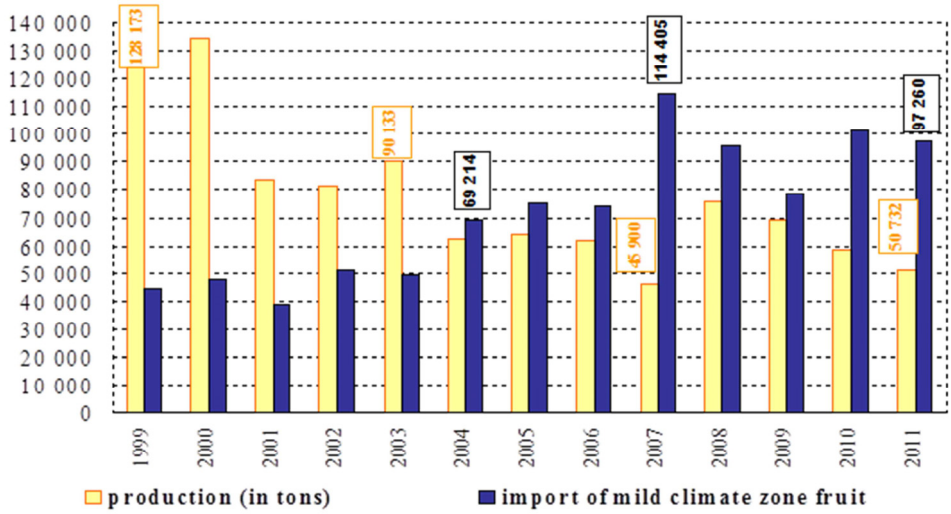
Table 1. Share of vegetable and fruit products produced by domestic food industry in retail chain of Slovak Republic

Food category	2008	2009	2010	2011
Compotes	8,85	10,08	13,20	13,76
Tomato purée and ketchup	46,72	35,40	27,90	28,25
Jams, jellies and marmalades	23,42	21,16	29,45	15,66
Canned vegetables (except cucumbers)	25,00	18,66	30,14	11,27
Pickled cucumbers	35,65	40,34	31,55	39,24
Sour cabbage	92,25	91,43	84,56	78,80

Source: Ministry of Agriculture and Rural Development of the Slovak Republic

In 2011 the area of orchards in Slovakia declined by 31.6 % and fresh fruit production by 43.7 % compared to Pre-Accession period but the import of mild climate fruits rose by 97.4 % [Meravá, 2012].

Figure 3. Fresh fruit production and import to Slovakia



Source: Statistical Office of the Slovak Republic

23.3.1. Issue of growing import

Accession of Slovakia to the European Union on 1st of May 2004 can be considered as crucial in terms of the intensity of goods exchange, when the elimination of all trade and administrative barriers allowed more intensive movement of goods in trade with EU member states. Since that, import volume of food products to the Slovak market increases every year. In terms of utilization of

disposable production potential are determining replaceable agricultural commodities, i.e. those for whose production has Slovakia the climatic, technological and working conditions and educational skills. In terms of replaceable agricultural commodities there is a wide space for utilization of production and labour potential of fruit and vegetable of temperate climate zone.

There are several explanations for growing fruits and vegetables import on Slovak market although the country has a good climate and soil conditions as well as working knowledge and production potential. First reason is naturally substantial production decline accompanied by weakening of domestic producer base (Table 2 and 3). It must be noted that farmers were insufficiently prepared to EU integration, to new socio-economic changes and to liberalized EU market. Growers face unequal competition as they are receiving lower financial support compared to farmers from old EU Member States. Farmers are struggling with steadily raising input prices and land taxes. During last decade input costs rose by 40 % but farm gate prices just by 25%. Survey of the EC uncovered that 6 companies control almost 75% of agricultural chemicals market within EU. The problem of rising Slovak fruit and vegetable import is also existence just a few producer groups and therefore their weaker bargaining power towards large food processors and retail chains. Moreover producers are unable to ensure retail sector the large vegetable and fruit deliveries simultaneously of equal quality during whole marketing year.

Table 2. Number of agricultural enterprises growing vegetables, melons and strawberries

Country	**2007**	**2010**	**Change in %**
Hungary	25 680	31 930	+ 24.3
Poland	206 770	140 270	- 32.2
Germany	17 080	14 330	- 16.1
Netherlands	9 260	8 290	- 10.5
Spain	134 140	105 900	- 21.1
France	38 210	39 120	+ 2.4
Italy	140 330	111 680	- 20.4
Czech Republic	2 270	920	- 59.5
Austria	4 310	3 730	- 13.5
Slovakia	5 610	1 510	- 73.1

Source: Eurostat

Table 2 indicates that Slovakia appertains alongside Poland and Czech Republic to countries with steep decline of vegetable producers. Compared to 2007 the number of Slovak farms orientated to vegetable production fell by

73%. Similar situation is in fruit growing where number of farms declined by 50.3% in Slovakia, by 47.2% in Czech Republic and by 40.6% in Poland (Table 3).

Table 3. Number of agricultural enterprises growing fruits

Country	2007	2010	Change in %
Poland	416 660	247 640	- 40.6
Spain	247 130	192 650	- 22.0
Italy	245 950	236 240	- 3.9
Lithuania	120 980	92 290	- 23.7
Greece	112 110	84 720	- 24.4
Hungary	91 520	97 040	+ 6.0
Portugal	71 680	78 650	+ 9.7
Bulgaria	54 310	42 830	- 21.1
Czech Republic	3 240	1 710	- 47.2
Slovakia	1 630	810	- 50.3

Source: Eurostat

We would like to mention causes of fruit production decline in Slovakia that are special in certain respects compared to vegetables. Growing trend of extensive orchards and abandonment of orchards started due to use of lower level of agricultural technique compared to other vegetable production as well as failing in site selection of potential orchards. Except some specialized enterprises the current level of fruit cultivation is unsatisfying in Slovak Republic. Contrary to the past fruit growers have to comply with very strict European regulations demanding new biomaterials with different parameters and new cultivars with higher resistance against climate changes, with better visual and taste properties. On the other hand these rules can increase competitiveness of growers. Fruit cultivation is more susceptible to weather fluctuations and to climate changes (occurrence of natural disasters – hailstorm, windstorm, flooding). Fruit growing needs higher investments (to drip irrigation systems, bird nets) compared to vegetable production. Establishing new orchard requires high initial costs that currently range from 12 to 50 000 EUR per hectare and especially young farmers have very complicated access to bank loans. Problem is non-existence of capital connection between fruit growers and processors. Fruit production development is hampered by relatively low consumption due to high retail prices, weak promotion of health aspects of fruit consumption and absence of private quality standards and certifications. Based on survey conducted by Eurostat 95 % of Slovak population are consuming fruits and thereof 22.2 % twice or more times per day (Table 4).

Table 4. Survey of fruits consumption conducted in 2008 in selected EU-countries (in %, all age and education categories)

Country	twice or more a day	once a day	once a week
Belgium	27,6	35,7	25,0
Bulgaria	10,4	34,8	42,9
Czech Republic	27,9	38,3	28,8
Greece	21,0	39,7	29,4
Spain	38,2	32,1	22,4
France	44,8	21,0	23,5
Cyprus	27,4	38,4	27,7
Latvia	18,2	42,0	35,4
Hungary	30,9	37,4	26,5
Malta	44,3	29,6	20,3
Poland	19,9	41,7	31,7
Romania	16,9	28,7	42,6
Slovenia	37,0	37,7	20,7
Slovakia	22,2	42,0	31,6

Source: Eurostat

Table 5. Volume of selected fruit foods production and producing capacities in Slovak Republic (tons)

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Production of jams	3178	4241	3952	2424	1979	2864	2918	2500	2480	2765
Processing capacities of jams	9926	11426	11426	11426	10926	11426	5000	5000	4200	4500
Use of processing capacities (in %)	32,02	37,12	34,59	21,21	18,11	25,07	58,36	50,00	59,05	61,44

Source: Ministry of Agriculture and Rural Development of the Slovak Republic

Production of fruit jams fell by 30.0 % compared to the year 2004 and simultaneously processing capacities decreased by 60.6 % in Slovak food industry. Use of fruit jams processing capacities still lacks by almost 40 % of production capacities at disposal.

Table 6. Fruit juices production and producing capacities in Slovak Republic (tons)

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Production of fruit juices	21 602	16 071	39 474	178 943	160 969	153 909	21 249	30 986	32 238	22 796
Processing capacities	82 745	66 249	101 996	475 232	499 232	222 341	124 048	121 548	121 548	131 538
Use of processing capacities (in %)	26,11	24,26	38,7	37,65	32,24	69,22	17,13	25,49	26,52	17,33

Source: Ministry of Agriculture and Rural Development of the Slovak Republic

Fruit juices production is reduced by 42.3 % compared to the year of EU-Accession but processing capacities paradoxically grew by 29.0 % although there are used just on 17.3 %. The production of sterilized compotes diminished by 27.2 % and production capacities by 36.3 % respectively.

Table 7. Sterilized compotes production and producing capacities in Slovak Republic (tons)

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Production of compotes	888	1 473	2 592	1 478	2 111	1 949	2 161	1 738	1 579	1 888
Processing capacities	24 850	6 250	7 850	5 820	5 650	5 650	5 450	3 950	5 000	5 000
Use of processing capacities (in %)	3,57	23,57	33,02	25,40	37,36	34,50	39,65	44,00	31,58	37,76

Source: Ministry of Agriculture and Rural Development of the Slovak Republic

Table 8. Tomato purée production and producing capacities in Slovak Republic (tons)

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Production of tomato purée	3 148	3 062	3 053	1 888	2 574	1 929	2 274	1 728	1 522	2 158
Processing capacities	4 880	5 280	5 280	4 180	5 380	5 380	4 880	4 880	4 880	4 880
Use of processing capacities (in %)	64,51	57,99	57,82	45,17	47,84	35,86	46,60	35,41	31,19	44,22

Source: Ministry of Agriculture and Rural Development of the Slovak Republic

Compared to the year 2004 the production of tomato purée fell by 29.3 % and production of tomato ketchup very similarly by 30.2%. During the same period processing capacities decreased by 7.6 % and 15.1 % respectively. Processing capacities were currently used on 44 % and 34 % respectively.

Table 9. Tomato ketchup production and producing capacities (tons)

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Production of tomato ketchup	2 325	2 252	2 145	2 935	3 632	4 228	4 305	2 175	1 786	1 497
Processing capacities	4 250	3 763	5 150	4 900	4 950	5 250	5 254	3 100	3 250	4 370
Use of processing capacities (in %)	54,71	59,85	22,23	59,90	73,37	80,53	81,94	70,16	54,95	34,26

Source: Ministry of Agriculture and Rural Development of the Slovak Republic

23.3.2. Agricultural labour market situation

In the recent past the agrarian sector in regions with poorly developed economic infrastructure employed marginal social groups, i.e. less skilled group of workers, women, pensioners, the Roma population and that like, which had no other options for local working use. In agriculture since the early ´80s of 20th century has strikingly expanded non-agricultural activities so-called associated production, which has employed about one-fifth of the total number of agricultural workers. Transforming of agricultural production since the early ´90s of 20th century has reflected the changes in the structure of arable land use and in the transition to semi-intensive method of most crops cultivation. Orientation of producers to market crops using high performance machinery has brought also reduced need for manual manpower. According to the Statistical Office data, the plant production employed 30 862 tractor drivers and mechanization workers in 1992 and it employed only 5 824 workers in 2010, which presents a decrease in 81.0% (25 038 people). In the recent years a trend of lucrative crops moving (oil plants) to better production conditions was shown, that became one of the factors increasing production intensity, effectiveness and competitiveness. At present the largest part in sowing structure in Slovak Republic comprise cereals (54.2%) and oil plants (21.2%).

Agriculture was the sector with the sixth highest state of job applicants in the records of labour office in 2011. The share of long-term unemployed from agriculture (they are more than one year in the records) is more than 55%, what shows, that this unemployed population has very poor reintegration into the labour market. Of all the long-term unemployed over 2 years comes every tenth

job applicant from agricultural sector. In addition, there were 1.5 thousand graduates of agricultural, forestry and veterinary schools in records of labour office at the end of 2011. The highest share of agricultural unemployment is in Nitra and Banská Bystrica counties and especially in their productive southern districts.

Table 10. Unemployment rate by age and gender division in the Slovak Republic (in %)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Men													
20 - 24	25,4	31,3	33,7	32,5	28,5	29,7	26,9	21,9	17,4	15,6	25,3	32,2	29,3
25 - 29	16,0	18,3	18,9	15,9	17,0	16,2	14,6	11,7	9,3	9,4	13,5	18,4	17,1
30 - 34	13,5	15,0	17,1	15,5	13,1	13,5	12,8	8,9	8,6	7,2	9,5	11,7	12,1
35 - 39	12,7	15,8	16,3	15,7	14,6	14,4	13,8	11,0	7,6	6,6	8,1	9,1	8,9
Women													
20 - 24	23,0	24,9	29,1	31,0	26,9	27,5	24,3	23,2	16,1	17,0	23,1	28,3	29,8
25 - 29	18,2	19,9	20,2	19,4	17,0	19,4	18,7	13,4	13,8	12,6	14,2	14,3	16,0
30 - 34	18,6	20,1	18,6	18,7	20,2	18,8	17,0	15,1	12,4	10,9	12,3	14,1	14,5
35 - 39	14,8	17,6	15,2	15,7	15,2	16,9	15,2	14,2	11,0	10,6	12,0	15,0	12,6

Source: Statistical Office of the Slovak Republic

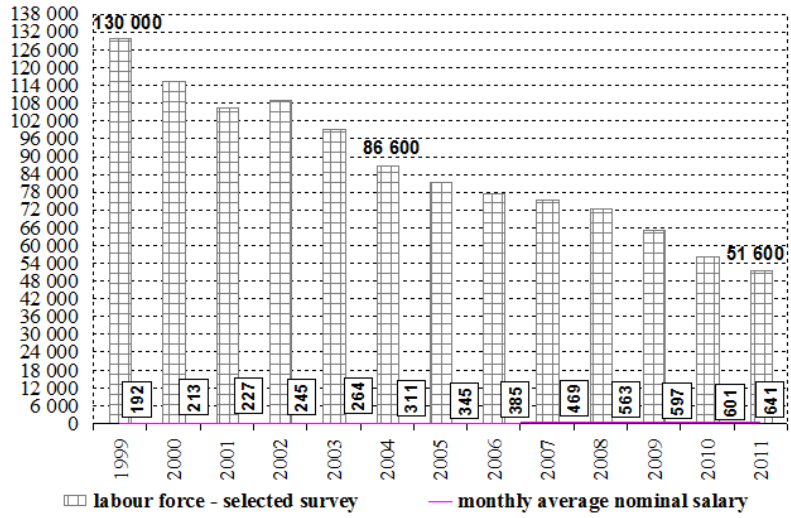
The average unemployment rate in Slovakia is 14.5 % since 1994. Most unemployed people came from young generation in age category from 20 up to 30 years old (Table No.5). According to data of Statistical Office of the Slovak Republic (SO SR) more than 10 % unemployed persons´ last job was formerly in agriculture, forestry or fishing sector. Firing of workers further deepens socio-economic decline of problem regions. Given the lack of substitute job opportunities and low infrastructural facilities in these regions, the regional markets can't absorb redundant workers. This development generates more problems, because in structure of unemployed dominate unskilled workers with basic education, women with little children, pre-retirement workers and people with disabilities. Dependence on housing, transport costs and undeveloped housing market is the cause of very low labour mobility. Most of the unemployed from agriculture have the neither ability nor capital to start their own business.

The ability to enhance employment opportunities and raise earnings of rural population is necessity for survival and future development of rural areas. With the aim to increase employment in rural areas the Slovak Agricultural and Food Chamber proposed that the employment agencies would reimburse a part of wage costs and payroll taxes of new created jobs in agriculture sector during two years period.

23.3.3. New job opportunities

Reasons of labour force decrease in vegetable and fruit sectors were various. We mention most important on economic side, namely reduction of agricultural production, transition to semi-intensive method of crops cultivation, substitution of manpower by efficient agricultural technology. However, there are also social reasons: disinterest of employers for low-skilled workers, loss of work motivation of some people due to low average earnings in agriculture compared to average wage in national economy, low labour mobility due to undeveloped real estate market and high transport costs. A lot of people lost agricultural skills or they became old to work in agricultural husbandry Majority of landowners is 2nd and 3rd generation of farmers´ descendants who have little or no attitude towards agricultural land and work in agriculture.

Figure 4. Number of employees in Slovak agriculture and average salary (in EUR/month)



Source: Statistical Office of the Slovak Republic.

23.3.4. Calculations of labour force opportunities

It must be stressed that growing of fruit and vegetable and their processing in food products have objective assumptions to mitigate of unemployment problem in the Slovak countryside. A large number of fruits and vegetables are imported at Slovak market although we could grow them at home conditions. We have a good climate and soil conditions as well as knowledge and production potential. By increasing of fruits and vegetables production and by their processing in food products will create added value, increase of proportion of home-made food for the internal market (local and regional markets), create jobs and improve the quality of rural life.

Table 11. Production and consumption of fresh vegetables in Slovakia since EU-Accession

Years	2004	2005	2006	2007	2008	2009	2010	2011
Production	380 626	353 567	351 526	307 756	332 954	312 084	284 429	314 855
Consumption	348 177	347 881	370 529	358 513	406 008	386 222	383 581	384 000*

*Source: Statistical Office of the Slovak Republic; *preliminary.*

To cover fresh vegetable consumption Slovakia needs to produce approximately additional 70 000 tons per annum. Considering average yield per hectare 11 tons it is necessary to seed at least 6 400 hectares more in order to cover domestic consumption of cabbages, tomatoes, carrots, onions, garlic and other kinds of vegetables. It is assumed the need for employment of one worker per 2.3 hectares of vegetables, which could create approximately **2 780** jobs in total.

The covered areas – greenhouses, plastic greenhouses and hotbeds are assumption for intensification of vegetables growing with view to providing yield in longer period during the year. Harvesting of vegetables grow in covered areas accelerated by almost 2 months in the spring and about same time in the fall.

Table 12. Area and production in covered areas between 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
Area in hectares	155,8	153,6	159,8	115,9	129,4	101,7	66,3	107,8

Source: Statistical Office of the Slovak Republic.

Slovak Republic has currently available 812 GWh of thermal energy from geothermal wells, which would be able year-round heated 97.4 hectares of covered areas. According to existing projects of greenhouse management the need

of manpower per 1 ha of area ranges from 7 to 10 employees in permanent employment and at the time of the harvest is needed next 6-7 seasonal voluntaries. In greenhouses and plastic greenhouses could therefore employ up to 974 permanent workers and 681 seasonal workers.

Table 13. Production and consumption of mild climate zone fruits in Slovakia since EU-Accession

Years	2004	2005	2006	2007	2008	2009	2010	2011
Production	62 544	64 528	62 043	45 900	75 656	69 086	58 722	50 732
Consumption	106 919	102 634	95 661	113 272	120 682	115 500	110 736	107 192

Source: Statistical Office of the Slovak Republic

According to Pomology Union of SR for coverage of fruit consumption by domestic production would be ideal to achieve fruit harvest in orchards about 110 thousand tons, at which the current harvest is a half. It is needed to plant about 12 500 ha of orchards that with average yield 4.5 tons per hectare will provide more that 56 000 tons of fruits. Extension of orchard planting would create about 5 430 new jobs.

Fieldsend and Kerekes [2011] concluded that there are four main ways to built economic prosperity in rural areas that can be applicable also on vegetable and fruit production. 1) production based on renewable resources (for instance: local production of high-quality and healthy fruits and vegetables and use of biomass from vegetables and fruits cultivation in biogas plant); 2) production based on non-renewable (depletive) resources (sand, gravel or clay mining); 3) consumption by non-residents (promote the tourism and leisure sectors in order to sale fruits and vegetables to visitors and owners of holiday homes); 4) consumption by residents of the territory (for instance: set up businesses for fruits and vegetables processing and develop local food industry).

Case study [2008] in Essex, East of England suggested to promoting employment and self-employment in rural areas through set up of entrepreneurial learning network in which urban private businessmen either by themselves or in partnership with universities or research institutes will stimulate entrepreneurship and marketing skills and experiences. Secondly it would be useful to support small fruits and vegetables growers and processors from the side of governmental regulation bodies and local authorities for example via tax reduction, lower rents on agricultural land, easier access to agricultural land.

3.4. Conclusions

Trend of decrease of jobs in agricultural sector started after the transformation of the economy to a market system. Currently, it is employed in agriculture less than 76 thousand people and huge quantity of processed food products made from fruits and vegetables is imported on Slovak market although existence of domestic production potential for fruits and vegetables growing in temperate regions as well as skilled labour force. During past 12 years domestic production of vegetables and fruits declined significantly. Slovakia became interesting market place for foreign food suppliers and unfortunately sometimes a market outlet for low quality or junk food. Return of rural people to vegetables and fruits growing will affect unemployment rate decline. This requires legislative, financial incentives and economic stimulus to arouse interest in vegetables and fruits growing among rural population and particularly young generation. Revival of commercial vegetables growing on farms including covered areas could provide around 3 700 permanent jobs and commercial fruits growing further 5 400 jobs. It will mean that increasing the production of vegetables and fruits in the Slovak Republic could create more than 9 100 jobs in total within 3 years taking into consideration time of new orchards fruit bearing. Further job opportunities could originate in currently just partly unused food processing capacities. Except of increase of employment it will raise value added of vegetables and fruits products that generates mainly abroad now. The creation of jobs in farming and food industry will ensure to rural population adequate standard of living and at least mitigate depopulation of rural areas. The objective of agricultural policy should be affordability of fresh locally grown fruits and vegetables which will increase revenue of farmers, it will reduce unemployment problem and it will improve local economy and quality of life in rural areas.

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