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№ 13

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Foreword

Each year the Faculty of Economics in Latvia University of Agriculture prepare international scientific conference „Economic science for rural development" together and publish internationally reviewed papers of scientific researches, which are presented at the conference. In it participate many economic scientists form different European countries. Its themes are very closely connected with actual situation, that is why even three issues were published – 12., 13. and 14. The first volumes of scientific conferences proceedings were published in 2000.

This year international scientific conference on 25-26 April, 2007 is organized by the **Faculty of Economics** in Latvia University of Agriculture and the Department of Agrarian Economic Sciences of the Academy of Agricultural and Forestry Sciences of Latvia together with the universities of Agriculture of Estonia, Lithuania and Poland and many other economic scientists from European universities of Agriculture.

The organization of the conference and the publication of scientific proceedings are supported by the Ministry of Agriculture of the Republic of Latvia.

Every year increases the number of universities and scientific institutes from where participants come. In this conference participate professors, associate professors, assistant professors, PhD students and other researchers and present their results of scientific researches from the following higher educational institutions:

- Latvia University of Agriculture (Jelgava)
- Lithuania University of Agriculture (Kaunas)
- Estonian University of Life Sciences (Tartu)
- Warsaw University of Agriculture (Poland)
- University of Agriculture of Szcecin (Poland)
- University of Agriculture of Cracow (Poland)
- University of Bonn (Germany)
- Estonia University of Agriculture (Tartu)
- University of Latvia (Riga)
- University of Tartu (Estonia)
- Latvian State Institute of Agrarian Economics (Riga)
- Riga Technical university (Latvia)
- Vilnius Law and Business College (Lithuania)
- University of Applied Sciences Fulda (Germany)
- University of Daugavpils (Latvia)
- Humboldt University of Berlin (Germany)
- Bundesanstalt für Bergbauernfragen (Vienna, Austria)
- Warsaw University of Life Sciences
- Universities of Varmia and Mazuria in Olzstin (Poland)
- Riga Teaher Training and Educational Management Academy (Latvia)
- University of Missouri-Columbia (USA)
- School of Business Administration Turiba (Latvia)
- Academy of Humanities and Economics in Lodz (Poland)
- Kujawsko Pomorska Higher Education Institution in Bydgoszcz (Poland)
- Transport and Telecommunication Institute (Riga)
- The Higher Vocational College in Biała Podlaska (Poland)

The international scientific conference was promulgated in June, 2006. All proceedings are arranged in 10 thematic units:

- Efficiency of production in primary and secondary sectors of agriculture;
- Rural development and globalization;
- The effects of financial support;
- Regional agriculture in the contexts of specialization and globalization;
- Cooperation and integration;
- Rural mentality and development of the culture in rural areas;

- The role of information in rural development;
- Management of rural development;
- Quality of life and environment in rural areas;
- Changes of consumption in rural areas.

These themes are arranged in three volumes.

To secure high level scientific and methodological researches results meeting the requirements of international standards, presented at the conference, comprehensive reviewing of submitted scientific proceedings was done on international and inter-university level. The greatest part of the report is in English.

Every submitted manuscript was reviewed by one reviewer from author's country; the second reviewer was from other country or university. The third reviewer was chosen in the case of conflicting reviews.

All reviewers were anonymous for the authors of the report. Every reviewer received manuscripts without authors' names. Every author received the reviewers' comments and objections.

After receiving the improved (final) version of the manuscript the Editorial Board of this conference evaluated each report.

In three volumes of the international scientific conference „Economic science for rural development" is published:

- 25 papers by 47 authors from Latvia University of Agriculture
- 3 papers by 5 authors from Lithuania University of Agriculture
- 8 papers by 11 authors from Warsaw University of Agriculture
- 13 papers by 14 authors from University of Agriculture of Szcecin
- 4 papers by 4 authors from University of Agriculture of Cracow
- 2 papers by 3 authors from University of Bonn
- 2 papers by 3 authors from University of Latvia
- 7 papers by 9 authors from Latvian State Institute of Agrarian Economics
- 3 papers by 4 authors from Riga Technical university
- one paper by 2 authors from University of Tartu
- as well 16 papers of different authors.

All papers are arranged in the thematic volumes:

12. Development: Regional and Rural;
13. Primary and Secondary Production, Consumptions;
14. Finances, Taxes, Investment and Support Systems.

The volumes were arranged so that they satisfy international standards for the proceedings:

- The editions have international Editorial Board in which are members from participating countries.
- Manuscripts were reviewed by 79 economic scientists from 27 universities or scientific institutions;
- The issues are published regularly and they are numbered: this year are published 12., 13., and 14 volumes.
- Papers written in English prevail while papers submitted in other languages give the English version for the summaries, titles and texts for tables and/or figures.
- The volumes are available also electronically on the conference web site, thus it can be used worldwide.

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In the proceedings presented researches and their results are now accessible to wide circle of readers in European Union. We hope that they will activate the possibilities of the new EU countries. The publishing of the proceedings before conference will activate also its process, exchange of thoughts and collaboration of economic scientists in international level. The proceedings can be used by students and interests.

We say thanks to all authors, reviewers, members of Editorial Board and technical personal. We want to say thanks especial to Ministry of Agriculture of the Republic of Latvia and The Rural Support Service for the comprehensive support in publishing the scientific proceedings and organization of international conference.

On behalf of organizers of the conference
professor of the Faculty of Economics of LUA **Voldemārs Strīķis**

Priekšvārds

Latvijas Lauksaimniecības universitātes (LLU) Ekonomikas fakultātē līdz ar ikgadējo, tradicionālo starptautisko zinātnisko konferenci **„Ekonomikas zinātne lauku attīstībai"** iznāk tajā prezentējamo pētījumu starptautiski recenzētie zinātniskie raksti. Šo konferenču rīkošana kļuvusi regulāra. Tajās piedalās liels skaits ekonomikas zinātnieku no daudzām Eiropas valstīm. Konference veltīta aktuālai tematikai, tāpēc iznāca pat trīs secīgi – 12., 13. un 14. laidiens. Šādu zinātnisko rakstu pirmais laidiens iznāca 2000. gadā.

Šo, proti, **2007. gada 25. un 26. aprīļa starptautisko zinātnisko konferenci kā ik gadus rīko LLU Ekonomikas fakultāte** kopīgi ar Latvijas Lauksaimniecības un meža zinātņu akadēmijas Agrārās ekonomikas zinātņu nodaļu, piesaistot Igaunijas, Lietuvas, Polijas un daudzu citu valstu lauksaimniecības universitāšu ekonomikas zinātniekus.

Konferences rīkošanu un zinātnisko rakstu izdošanu atbalstīja Latvijas Republikas Zemkopības ministrija.

Ik gadus paplašinās starptautiskajā konferencē pārstāvēto universitāšu un zinātnisko institūciju skaits un areāls. Šajā konferencē piedalās un savus zinātnisko pētījumu rezultātus prezentē profesori, zinātņu doktori, asociētie profesori, docētāji, doktoranti un citi pētnieki no šādām augstskolām un zinātniski pētnieciskajām iestādēm:

- Latvijas Lauksaimniecības universitātes (Jelgavā)
- Lietuvas Lauksaimniecības universitātes (Kauņā)
- Igaunijas Dzīvības zinātņu universitātes (Tartu)
- Varšavas Lauksaimniecības universitātes (Polijā)
- Ščecinas Lauksaimniecības universitātes (Polijā)
- Krakovas Lauksaimniecības universitātes (Polijā)
- Bonnas Universitātes (Vācijā)
- Latvijas Universitātes (Rīgā)
- Tartu Universitātes (Igaunijā)
- Latvijas Valsts agrārās ekonomikas institūta (Rīgā)
- Rīgas Tehniskās universitātes (Rīgā)
- Viļņas Tiesību un biznesa koledžas (Lietuvā)
- Kauņas Tehnoloģiju universitātes (Lietuvā)
- Fuldas profesionālās universitātes (Vācijā)
- Daugavpils Universitātes (Latvijā)
- Humbolta universitātes Berlīnē (Vācijā)
- Federālās pārvaldes kalnu zemkopības jautājumos (Austrijā)
- Varšavas Dzīvības zinātņu universitātes (Polijā)
- Varmijas un Mazūrijas universitātes Olštinā (Polijā)
- Rīgas Pedagoģijas un izglītības vadības augstskolas (Latvijā)
- Misuri-Kolumbijas Universitātes (ASV)
- Biznesa augstskolas „Turība" (Rīgā)
- Humanitāro un ekonomikas zinātņu akadēmijās Lodzā (Polijā)
- Kujavskas Pomorskas augstākās izglītības institūta Bidgoščā (Polijā)
- Transporta un telekomunikāciju institūta (Rīgā)
- Białas Podlaskas augstākās profesionālās koledžas (Polijā)

Starptautiskā zinātniskā konference tika izsludināta 2006. gada jūnijā. Tai izvēlēti 10 aktuāli temati:

- Ražošanas efektivitāte lauksaimniecības primārajā un sekundārajā sfērā
- Lauku attīstība un globalizācija
- Lauku ekonomiskā un sociālā attīstība
- Finansiālā atbalsta efektivitāte
- Reģionālā lauksaimniecība specializācijas un globalizācijas kontekstos
- Kooperācija un integrācija
- Lauku mentalitāte un kultūras attīstība laukos

- Informācijas loma lauku attīstībā
- Lauku attīstības menedžments
- Dzīves un vides kvalitāte laukos
- Patēriņa izmaiņas lauku attīstībā

Šie temati ietilpināti trijos zinātnisko rakstu laidienos.

Starptautiskās zinātniskās konferences zinātniskuma un starptautiskiem standartiem atbilstošu zinātnisko darbu prezentēšanas nodrošināšanai veikta vispusīga iesniegto zinātnisko rakstu starptautiska un starpaugstskolu recenzēšana. Šajā nolūkā lielākā daļa zinātnisko rakstu ir angļu valodā.

Katru iesniegto zinātniskā raksta manuskriptu parasti vērtēja (recenzēja) viens autora valsts recenzents un otrs – citas valsts vai citas augstskolas recenzents. Pretrunīgu recenziju gadījumā darbs tika nodots vēl trešajam recenzentam. Recenzenti darbu autoriem bija anonīmi, arī redkolēģija recenzentiem nodeva darbus bez autoru uzvārdiem.

Katram autoram tika nosūtīti recenzentu iebildumi vai ieteikumi. Pēc uzlabotā (galīgā) varianta un autora paskaidrojuma saņemšanas katru zinātnisko rakstu vērtēja šīs konferences zinātnisko rakstu redkolēģija.

Starptautiskās zinātniskās konferences „Ekonomikas zinātne lauku attīstībai" rakstu trīs tematiskos laidienos ievietoti:

- Latvijas Lauksaimniecības universitātes 47 autoru 25 darbi;
- Lietuvas Lauksaimniecības universitātes 5 autoru 3 darbi;
- Varšavas Lauksaimniecības universitātes 11 autoru 8 darbi;
- Ščecinas Lauksaimniecības universitātes 14 autoru 13 darbi;
- Krakovas Lauksaimniecības universitātes 4 autoru 4 darbi;
- Bonnas universitātes 3 autoru 2 darbi;
- Latvijas Universitātes 3 autoru 2 darbi;
- Latvijas Valsts agrārās ekonomikas institūta 9 autoru 7 darbi;
- Rīgas Tehniskās universitātes 4 autoru 3 darbi;
- Tartu universitātes 2 autoru 1 darbs;
- kā arī vēl 16 augstskolu autoru darbi.

Visi zinātniskie raksti sakārtoti trijos tematiskos rakstu laidienos:

Nr. 12. Attīstība: lauku un reģionālā;
Nr. 13. Primārais un sekundārais sektors, ražošana, patēriņš;
Nr. 14. Finanses, nodokļi, investīcijas un atbalsts.

Zinātniskie laidieni gatavoti tā, lai tie atbilstu starptautisko rakstu standartiem:

- programmas komitejā ir 6 valstu augstskolu pārstāvji;
- laidieniem ir starptautiska redkolēģija, kurā darbojās konferences dalībvalstu augstskolu zinātnieki;
- rakstus recenzējuši 79 ekonomikas zinātnieki no 27 universitātēm vai zinātniskām institūcijām;
- zinātniskie raksti tiek izdoti regulāri un laidieni tiek numurēti: – 2007. gadā tiek izdoti 12., 13. un 14. laidiens;
- dominē angļu valodā gatavoti raksti, bet citās valodās iesniegtiem rakstiem angļu valodā ir dublēti kopsavilkumi, virsraksti, tabulu un attēlu teksti;
- zinātniskie raksti ir arī elektroniskā formā, ievietoti konferences mājas lapā un izmantojami visā pasaulē.

Zinātniskajos rakstos izklāstītie pētījumi un to rezultāti kļūst pieejami plašam interesentu lokam Eiropas Savienības telpā. Ceram, ka tie aktualizēs jauno Eiropas Savienības valstu iespējas. Rakstu publicēšana pirms konferences sekmēs tās norisi, domu apmaiņu, ekonomikas zinātnieku starptautisko sadarbību. Rakstus varēs izmantot studējošie un visi interesenti.

Ceram saņemt atsauksmes un priekšlikumus turpmāko zinātnisko rakstu izdevumu sagatavošanai un starptautisko zinātnisko konferenču rīkošanai.

Pateicamies visiem rakstu autoriem, recenzentiem, programmas komitejai, redkolēģijai un tehniskajam personālam. Sevišķs paldies Latvijas Republikas Zemkopības ministrijai un Lauku atbalsta dienestam par vispusīgu atbalstu zinātnisko rakstu izdošanā un starptautiskās konferences rīkošanā.

Konferences organizācijas komitejas vārdā **profesors VOLDEMĀRS STRĪĶIS**

Content

PRIMARY AND SECONDARY PRODUCTION, CONSUMPTION

EFFICIENCY ANALYSIS OF AGRICULTURAL SECTOR IN LATVIA COMPARED TO OTHER EU COUNTRIES, BASED ON FADN DATA

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Mgr. soc.sci. **Ieva Leimane**, Latvia State Institute of Agrarian Economics, Researcher, Project Leader
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Summary

Under conditions of the EU single market of commodities, services and labour, the matter of production competitiveness on the European scale is very important also for Latvian agriculture. It is essential that Latvian farmers could ensure efficient production at a sufficiently low cost level. The objective of the research performed was to reveal the strengths and weaknesses of Latvian agriculture in terms of their cost structure, by analysing the economic information of agricultural holdings, using FADN standard results.

The research was mainly performed by using methods of statistical analysis and logically constructive analysis.

The analysis enables assessment of the efficiency of agricultural production in Latvia at present, as well as the awareness of the opportunities for increasing the efficiency of production.

When comparing the cost level in Latvia and in 14 selected Member States of the EU, Latvia has one of the highest levels of intermediate consumption, while most crucial is the low level of general production efficiency, measured as the value added per work unit (AWU). This indicates that there is a lack of modern technologies, which presume also higher labour productivity.

In the light of comparatively lower labour remuneration and land use costs, which ensured the production with smaller necessary capital intensity, agricultural production in Latvia has been competitive in the first years after joining the EU. However, due to the expected increase of these costs, the competitiveness could be lost in the next 2-3 years. In order to avoid this, efficient use of the resources becomes crucial.

Key words: competitiveness, analysis, the net value added, FADN information.

Concepts used in the research:

1) value added – the product value created by factors of production (labour, land, capital, enterprise) which provides income for the owners of separate factors; the net value added = production output + subsidies – production taxes – intermediate consumption – capital consumption;
2) production output – the value of produced goods and services at market prices;
3) subsidies – in this paper treated as subsidies which constitute the income of the current year, that is the subsidies related to the particular year and being relevant to agricultural activities or to utilization of resources (land etc.), except investment subsidies;
4) intermediate consumption – the value of goods and services used in the process of production, except capital consumption and compensation for employees;
5) external costs –compensation for employees, rents and interest;
6) agricultural work unit – the measurement unit of labour consumption: it corresponds to 1840 work hours of full time employed person within the sector. One person cannot constitute more than one unit even if there is more work accomplished
7) European size unit – a measurement unit of economic size of farms. One European size unit (ESU) corresponds to the standard gross margin (SGM) of EUR 1200. The standard gross margin is the production value minus variable production costs of this production at local prices. For the year 2004, it is calculated in the prices of the years 1999-2001.

Abbreviations

ESU – European size unit
EU – European Union
Eurostat – Statistical Office of the EU
LSIAE – Latvian State Institute of Agrarian Economics

AWU – agricultural work unit
UAA – utilised agricultural area
LU – livestock unit
NVA – net value added
CAP – Common Agricultural Policy
SAPARD – Special Action Programme for Agriculture and Rural Development
FADN – Farm accountancy data network

Introduction

In recent years, especially from the year 2002 when practical implementation of the *SAPARD* program started, significant efforts have been taken for modernization of agriculture and its related processing sectors. As a result, the production efficiency has grown and contributed to the improvement of the sector competitiveness. Despite this, the value added per employed person in the sector in Latvia is still lagging substantially behind the average level of the EU countries.

Following the overall tendency in the Latvian labour market – the fast increase of labour costs, the manufacturers of the agricultural products must also search for other opportunities apart from further investments into modernization of the technological process of production in order to increase the competitiveness of their production.

When analyzing the activities of the Latvian agricultural sector and their value adding productivity till now, a hypothesis was set, that due to the comparatively law resource utilization efficiency, the development of several sub sectors of agriculture and also the overall utilization of available production potential are hindered, thus lowering the overall competitiveness of the country, and especially of its rural regions.

Qualitative and quantitative methods can be used to evaluate the level of competitiveness. The group of researchers leaded by A. Miglavs has described those methods within research "The analysis of the development of competitiveness of agriculture production in Latvia" [8]. According to the description of methods in the research mentioned before authors have chosen the analysis of profitability as a method and net value added as a unit to study and compare economic efficiency of agriculture sectors in Latvia and other EU Member States.

The objective **of this study is** to analyse the indicators of economic efficiency of Latvian agriculture and its main subsectors in comparison with those of other EU Member States in order to reveal the strengths and weaknesses in the revenues-costs structure, consequently discovering the possible ***reserves*** **for increasing the production efficiency in the sectors.**

In order to reach this objective the following tasks were set:

- to analyse the physical and economical size of agricultural holdings in Latvia and in other EU countries;
- to compare the level and structure of the production costs of agricultural products, as well as cost/revenues ratios;
- to analyse the role of subsidies in the revenues of agricultural holdings and in the net value added;
- to compare the absolute and relative quantities of the net value added in the farms of the main specialization types;
- to indicate the main areas, where increase of production efficiency could be possible, on the basis of the obtained research results.

Methods of statistical analysis and logically constructive analysis are used in the research. The conclusions result from the performed research.

Within the framework of the research, the production value (in market prices), production costs and subsidies are analysed in separate stages of resource production and processing. The cost analysis is done for farms of different types of specialization, considering the total costs (intermediate consumption, capital consumption and external costs), as well as through examining the items of intermediate consumption separately.

In this research, the operating results of FADN farms are analysed separately according to the types of specialization:

- field crops (cereals, oilseeds and fibre plants, protein crops and other arable crops);
- grazing livestock (production of milk, cattle, sheep, goats, other grazing animals);
- granivore (production of pigs, poultry and rabbits).

Comparing to the EU countries, the production of the value added in the agriculture of Latvia is analysed using the standardized FADN results for the year 2004. The comparison is made against 15 EU countries – France, the Netherlands, Denmark, Finland, Sweden, Hungary, Austria, the Czech Republic, Italy, Ireland, Greece, Cyprus, Luxemburg and Portugal, for which the necessary information was available in the public data base of the Eurostat.

The Standardized FADN results comprise agricultural holdings of the economic size above 2 European size units (ESU). In such farms in Latvia, about 70% of agricultural production is produced, while these farms constitute only 16% of the number of active farms. The EU usually sets the threshold of FADN farms on the level that comprises at least 90% from the overall standard gross margin in the country; therefore, looking at the results, one should take into account, that the group of comparatively largest Latvian farms is comprised here – in order to include farms, which produce for the market.

The results are analysed for all types of farms, as well as for the farms of the above-mentioned types of specialization.

1. Economic size of farms

In 2004, the average economic size of all (all types of specialization) FADN farms in Latvia was 10.1 ESU. [5, 80]. In comparison with the EU countries, for which the information is available in the Eurostat data base (further – group of countries), it corresponds to the group of countries in the south of the continent – Greece, Portugal, Cyprus, where the average economic size of farms is 9.4-11.5 ESU, but in most of countries this level is 2-4 or even more times higher [7] (see table 1). However, Latvian farms should produce larger amount of products per 1 ESU, because this indicator is affected also by the level of prices in a respective country (and it has been lower in Latvia in order to reach similar economic size).

The farms in Latvia specialized in field crops are larger than farms of other types of specialization - 17.1 ESU [5, 116] against the average 10.1. Several countries in the group (including Finland, Italy, Luxemburg, Hungary, etc.) have the economic size of the farms specialized in field crops that could be comparable with Latvia.

Table 1

The average economic size of FADN farms in 2004, ESU (standardized results)

Country	Average	Specialization in field crops			Specialization in grazing livestock				Specialization in granivore		
	ESU	*ESU*	*AWU*	*UAA (ha)*	*ESU*	*AWU number*	*UAA (ha)*	*LU number*	*ESU*	*AWU number*	*LU number*
The Netherlands	140.4	93.5	1.91	55	106.8	1.54	40.7	105.2	133.3	1.69	521.1
The Czech Republic	109.9	65.5	4.4	179.5	43.4	6.19	225.4	112	221.1	10.95	699.1
Denmark	97.7	46.9	0.86	60.2	128.5	1.76	86.4	138.4	254.6	2.7	531
France	75.9	80	1.58	101.9	50	1.57	75.5	80.2	116.2	2.02	434.9
Luxemburg	60.8	21	1.19	58.8	62.8	1.68	85.8	107	-	-	-
Sweden	36.3	21.6	0.76	54.3	42.6	1.95	41.8	35.6	87.1	1.92	157.7
Italy	28.6	23.8	1.26	25.3	51.1	1.81	37.9	62.9	158.5	3.82	688.2
Austria	27.2	28.4	1.24	50	22.8	1.66	22.3	26.2	46.4	1.5	79.6
Ireland	22.5	53.2	1.19	71.6	20.4	1.15	39.6	49.6	-	-	-
Hungary	17.1	17	1.45	67.5	18.6	2.03	53.5	50.1	42.2	4.89	188.4
Cyprus	11.5	19.1	1.53	24.6	28.5	1.74	16.5	40.4	72.3	5.5	551.6
Portugal	10.8	19.3	1.52	30.2	16.8	1.48	32.3	26.8	60.2	2.39	223.7
Latvia	10.1	**17.1**	**2.49**	**110**	**6.8**	**2.33**	**55.9**	**26.6**	**63.1**	**7.3**	**244.1**
Greece	9.4	10.5	0.99	10	14.3	1.62	5.8	28.3	-	-	-
Average	*35.5*	*32.6*	*1.27*	*44.1*	*41*	*1.57*	*46.7*	*59.3*	*113.7*	*2.68*	*387.2*

Source: LSIAE calculations based on Eurostat and Latvian FADN data [5], [7].

In terms of the land use and labour contribution, Latvian farms specialized in field crops even exceed the average levels of other countries. Latvia has the second largest size of utilised agricultural area (UAA) (110 ha on average), and also labour contribution (2.5 agricultural work units (AWU)) [5, 116] is the second biggest beside the Czech Republic. Consequently, the level of labour used per UAA, in Latvia is comparable to other EU countries.

Hence, the conclusion can be made that comparatively smaller economic size in Latvia is not because of smaller physical size of specialized farms, but due to worse production/resource price ratio or due to the inefficient use of resources**, which is also an object** for further analysis in the research.

The grazing livestock specialization is the sphere, in which the average economic size of farms in Latvia noticeably falls behind the EU. On average, the economic size of grazing livestock specialization farms is only 6.8 ESU, which is 6 times less than the average level in the group of countries**.**

The data of average economic size of farms are summarized in Table 1.

Considerable reason for such a low indicator is the low purchasing price of cattle and milk in 2000, because currently used indicators of standard gross margin (SGM) were calculated in the prices of 2000. However, the average number of cattle (26.6 LU) [5, 159] is also at least two times less than in the group of countries of the EU-15 on average, although in several other EU countries (Austria, Portugal, Greece) it is similar to the Latvian indicators. The farms specialized in granivore, typically have the largest economic size comparing to farms of other types of specialization both in the EU and in Latvia. Although their average economic size in Latvia is almost twice less than in other countries (63 ESU against 114 ESU) [5, 152], [7], it exceeds the respective indicator in Hungary, Austria and Portugal. Nevertheless, the number of livestock per ESU in Latvia is comparable to other countries in consideration, while the labour consumption in Latvia is significantly higher.

2. Comparison of the production costs and their structure

Comparing the level of costs in Latvia an in the selected countries, it can be concluded that Latvia has one of the highest levels of production costs per ESU- it exceeds the average level of the considered countries by 50%. Also the structure of costs is different: Latvian farms have larger density of intermediate consumption, which constitutes 77% of the total costs [5, 82], in comparison with other countries with 64% on average [7]. But the share of intermediate consumption in output value in Latvia is 77% [5, 81-82]. It is larger only in Finland (88%) and Sweden (78%), but on average it is 56% [7].

In the terms of costs structure, Latvian farms have a noticeably larger share of feed (28% from total costs against 18% on average) and energy (15% against 6%). External costs have smaller share (11% against 19%), including the land rents (1% against 5%). Also there is smaller capital consumption indicator - 12% in Latvia against 17% on average [5, 81-83], [7].

However, it must be taken into account that the overall costs in Latvia are comparatively lower due to lower external costs (compensation for employees, land rent, interest), as well as smaller capital consumption in connection with smaller share of long-term investments. However, during last years, these cost items are also increasing rapidly; therefore Latvia is rapidly losing this advantage.

In its turn, the share of intermediate consumption in the value of production output in Latvia is higher than in other countries, especially in the farms specialized in field crops (69% against 57% on average). Only Finland and Sweden have worse results, but in the Czech Republic, the share is similar with that in Latvia. The situation with specialization in grazing livestock is similar, and a little better situation is in the farms specialized in granivore.

Compared to other countries, energy costs in Latvia have a larger share in the structure of overall costs (for specialization in field crops it is 17% against 7%, but for specialization in grazing livestock– 14% against 5%). In the farms specialized in granivore, a much greater share than in other countries falls on feed (41% against 30% on average). But in the Latvian farms specialized in field crops, the share of fertilizer costs is relatively high and reaches 13% against 9% in other countries, while the share of the rest of direct costs (seeds, plant protection products) is similar to other countries [5], [7].

3. Farm revenues and the net value added

Revenues from the market and subsidies

In FADN farms of Latvia, the revenues from the market are sufficient for covering of the costs – the ratio of revenues and costs is 1.01. Although in other countries this proportion is 1.14 on average, in approximately half of the countries of the reference group, the market revenues do not cover costs. The largest deficit is in Finland (0.75), Sweden (0.84) and Denmark (0.93). The best revenues/costs ratio is in southern countries – in Greece and Italy. But, for example, in France, this ratio is similar to Latvia – 1.02 [7].

Intensity of production can be measured by output value per employed person. Calculated per annual work unit, the output value in Latvia is the lowest among the countries included for comparison. It is also 4-5 times less than the average indicator.

The level of subsidies in various countries of the EU differs very much. For example, in the Netherlands and in the Czech Republic, the output value in a farm on average is almost the same; the amount of subsidies in the Czech Republic is 4 times higher. The share of subsidies in revenues is within the range from 3% in the Netherlands to 40% in Finland. With its 24%, Latvia is among the most subsidized countries, though the amount of subsidies per work unit is quite low, which is mainly due to the comparatively large labor consumption in agriculture [5, 84], [7].

The share of subsidies in the structure of revenues in some countries of the EU is very different also according to the types of specialization. In Latvia, the share of subsidies constitute 25% from the overall revenues for the farms specialized in field crops, for the farms specialized in grazing livestock - 23% (exceeding the average indicator by several percents), but in the farms specialized in granivore – 2% (against 4% on average) [5], [7].

The net value added

The most commonly applied indicator of farm labour efficiency is the net value added *(*NVA*)* and its attribution to the consumption of labour. In Latvian farms, the total NVA per farm has reached on average 13 581 EUR in 2004 [5, 84], which exceeds the indicators of Portugal, Cyprus and Greece, while by 1.5 times falls behind Hungary, two times – behind Finland, Sweden, etc. (Table 2). The absolute value of the net value added in the farms specialized in field crops in Latvia constitutes 2/3 from the average indicator in other countries, while in other types of specialization, it is a little under 50% of the average). In some countries, the indicator is even lower, for example, in Finland the field crops farms have the net added value less by 25% than in Latvia.

In its turn, the net value added per one full-time employed person in Latvia (5 652 EUR) was the lowest among the analysed group of countries, and it falls behind Cyprus, Hungary and the Czech Republic by almost two times. But in the northern countries – in Finland and Sweden – the net value added per one full-time employed is almost four times higher than in Latvia.

By the types of specialization, the net value added in Latvia is the highest for the farms specialized in field crops – 8200 EUR per work unit [5, 120], although it is almost three times less than in other countries on average. (Table 2)

In its turn, in the farms specialized in grazing livestock, as well as in the farms specialized in granivore, the net value added per employed person in Latvia is lower than in other mentioned countries. This group of farms has also the largest differences from the average indicator. This is due to comparatively large consumption of labour in the farms of this specialization type. Comparing, for example, the Netherlands and Denmark, in the Latvian farms specialized in granivore, the ratio net value added/agricultural work unit is 10 times smaller, but in the grazing specialization farms – 7 times smaller.

The low level of the net value added per employed person is an essential problem, because this directly affects the income of farmers and the competitiveness of the sector.

The share of subsidies in the net value added is an important indicator. In Latvia, it is on average higher than in other countries (61% against 37%), but the comparatively low average percentage indicator is provided by the southern countries and the Netherlands, while for the countries in medium latitudes, the share of subsidies in net value added is comparable with the indicator of Latvia. In Northern countries – in Finland and Sweden – the indicator is higher – respectively 139 % and 103%. It shows that the net value added is completely ensured by subsidies in these countries.

Comparing the share of subsidies in the net value added in various types of specialization, there is no significant difference between the indicators of Latvia and other countries. For specialization in field crops, it is comparatively higher in Latvia – 67% against the average 54%. The importance of subsidies for the farms specialized in grazing livestock is close to the average – 57% against 55%, but for specialization in granivore it is under the average level – 11% against 16% [5], [7].

Table 2

The net value added in agriculture on average and by types of specialization, 2004

Country	Average in agriculture			Specialization in field crops		Specialization in grazing livestock		Specialization in granivore	
	NVA (EUR)	NVA /AWU (EUR)	subsidies in NVA (%)	NVA (EUR)	NVA /AWU (EUR)	NVA (EUR)	NVA /AWU (EUR)	NVA (EUR)	NVA/ AWU (EUR)
The Netherlands	96892	38132	10 %	56261	29517	67652	43882	89229	52653
The Czech Republic	94434	9706	42 %	52275	11882	59514	9621	86815	7932
Denmark	64476	44320	41 %	35712	41710	85204	48540	141436	52334
France	49221	25459	53 %	45240	28706	32361	20628	44382	22018
Luxemburg	56096	32887	68 %	19273	16205	55663	33060	-	-
Sweden	28491	20084	103 %	22109	22978	34180	18824	25769	16106
Finland	29660	19576	139 %	15412	20220	37633	19254	51237	26737
Italy	35764	25007	19 %	40254	31842	51134	28304	251321	65850
Austria	30908	18913	62 %	38807	31250	25913	15579	32245	21483
Ireland	22501	19323	69 %	43148	36136	20803	18076	-	-
Hungary	18111	9652	49 %	20446	14056	15782	7763	46743	9555
Cyprus	11675	9247	50 %	11417	7456	44718	25755	117544	21365
Portugal	8457	5830	50 %	16215	10693	12982	8759	29931	12503
Latvia	**13581**	**5652**	**61 %**	**20441**	**8200**	**15058**	**6476**	**37011**	**5073**
Greece	12116	9857	33 %	10166	10302	19439	11984	-	-
Average	*31432*	*20066*	*37 %*	*30464*	*23999*	*33088*	*21065*	*86878*	*32412*

Source: LSIAE calculations based on Eurostat and Latvian FADN data [5], [7]

Conclusions

Comparing the operating results of FADN farms in Latvia according to the types of specialization, several conditional strengths, as well as weaknesses have been marked in farm economics.

- The economic size of farms in Latvia is noticeably smaller than in other countries of similar climate zone. In its turn, the physical size of farms covered by FADN in Latvia is one of the largest in the EU in terms of land area and labour consumption, but one of the lowest according to the livestock number. It shows that the land and labour resources in Latvia are utilized less intensively, which might be a positive factor from the point of view of ecological and other aspects, though it lessens the economic efficiency of the production.
- The overall share of costs in production output in Latvia is similar to other EU countries taken for comparison. Though Latvia has a larger share of intermediate consumption (especially, comparatively high level of several positions of direct costs, firstly in the total energy costs, for specialization in field crops – fertilizers and for specialization in granivore – costs of livestock feed), but a smaller share of external costs and capital consumption. Consequently, while the labour and land costs are increasing and also the investments are rising, this can negatively affect the overall competitiveness of farms in Latvia. Therefore the issue about the decrease of the intermediate consumption costs per unit of production is very essential. It becomes even more important because of the comparatively low share of the external costs of production (wages, rents, interest payments) in the structure of the overall costs which currently

positively affects the share of overall costs against the production output and ensures competitiveness for the export of resources, for example, in the sectors of milk, cereals and rape. However, these costs have a tendency to increase and consequently, the competitiveness could be lost during the following 2-3 years.

- Revenues from the market in Latvian farms were able to cover costs in the considered period, unlike such countries as Finland, Sweden and Denmark where the deficit is covered by subsidies.
- The level of subsidies in Latvia (if calculated per production value) is a little higher than the average level in the analysed EU countries, though it falls behind noticeably if calculated per utilised agricultural area and per agricultural work unit.
- The net value added in Latvia created per farm on average constitutes about 43% from the average indicator of other countries. This value is comparatively higher in the farms specialized in field crops – 67%. The net value added per ha of the UAA and AWU constitutes only about 25% from the average of other countries without significant differences according to types of specialization. Whereas per livestock unit the net value added is comparatively high – 101 % of the average in the farms specialized in grazing livestock and 68% in the farms specialized in granivore. It shows that in Latvia, large land and labour resources are used per livestock unit.
- More objective comparison of economic size would be possible if this indicator was calculated by using the prices of the production and resources of the year 2005, because the currently used prices are outdated. Despite this, the analysis of the efficiency of agricultural production in Latvia in comparison with other EU countries shows that the most essential problem is the low net value added per employed person created by agricultural production (especially in livestock production). The reserves for increasing the production effectiveness should be searched in the following positions: energy for all types of specialization, fertilizers for crop production and fodder for grazing livestock farms;
- Comparison with Finland and Sweden shows that in order to preserve agriculture in such climatic conditions it needs larger support from the state than for the EU on average. Without state support, which would compensate the higher production costs due to climatic conditions, there is little opportunity to keep up with the competition prices in the common EU market by having the mass product. In order to convey the production from competitiveness of prices to the competitiveness of the non-price factors, the development of special concept of values should be considered for the agricultural production, especially in the sectors already currently showing the features of export-oriented sectors.

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ECONOMIC RESULTS OF FARMS CONDUCTING ACCOUNTANCY IN POLAND (ON THE BASIS OF FADN)

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Abstract

The paper deals with the problem of economic situation of agriculture in Poland. It covers several leading indicators of economic situation such as total output, family farm income, balance sheets, and change in net worth, average farm capital, gross investment and net investment. Although the data showed that the largest farms had the highest economic efficiency, when calculated per agricultural holding, it was actually the smallest farms that had the highest economic efficiency when calculated per 1 ha of farmland. The smallest farms' income also included additional non-agricultural sources.

Key words: Agriculture in Poland, family farm income, balance sheet, financial indicators

1. Introduction

The economic situation of Polish agriculture is undergoing transformation and has encountered many problems such as low agricultural income. In many developing countries, production efficiency has increased and chemical fertilizers and mechanization have played an important role in the process. The Polish farming sector has experienced very significant changes in the last nineteen years and the process has been very rapid. However, production efficiency has been hindered by several factors, for example, low labour productivity (Tyran, 2004). The result of this process has been a drop in farm income.

Since May 1, 2004, the production efficiency of agriculture in Poland has been linked to the Common Agriculture Policy (CAP), which is an integrated system focused on maintaining commodity price levels and subsiding production. There are several rules which govern the agriculture commodity market, for example: an internal intervention price, subsidies to farmers and import tariffs on selected goods imported to the EU. The European Union has also introduced an external trade policy, which means that non-member countries have quotas for selling goods in European markets. This policy has resulted in the stabilization of rural production in Poland, for example, in beef, milk and wheat production. In addition, food prices are not so volatile, which has helped farmers to adjust their farms to European Union standards. The production of Polish commodities is regulated by plant production. The intervention purchase is set from November to May and the minimum price is €101.31/ton for wheat, barley and maize. Moreover, animal production is also regulated. When the beef price drops below €1568/ton, it triggers intervention purchasing. Milk, on the other hand, is regulated by production quotas.

2. Objective and method of analysis

The objective of this paper was to present the economic situation of agriculture in Poland in 2004**.** The research objects were the economic categories for example: total output, total immediate consumption, gross farm income and family farm income. The first economic category analyzed in the paper was total output. It is calculated as total of output of crops, livestock and other output. The final economic results described in this paper were family farm income. It was calculated as the "payment for family fixed factors of production and the payment for the entrepreneur's risks in the accounting year''[1].

[1] The results obtained by individual agricultural holdings conducting accountancy in the year 2004. Agricultural Accountancy Department, Warsaw, 2005

The results were based on accounting data gathered from Polish agricultural farms in cooperation with the Institute of Agriculture and Food Economics in Warsaw. The data was divided into five categories according to average farm area: very small (up to 5 ha), small (5-10 ha), medium-small (10-20 ha), medium-large (20-30 ha), large (30-50 ha) and very large (above 50 ha). Economic situation of agriculture was analyzed based on income per agricultural holding, balance sheet and financial indicator examples. All of the data in this paper is based on agricultural holding. Only family farm income is calculated per 1 ha of farmland. The Institute of Agriculture and Food Economics collected data from 11,251 farms in 2004 using the FADN (Farm Accountancy Date Network) system, which is the European system of data collection in accordance with EU rules. The results include average values for groups of agricultural holdings established according to agricultural area size and are calculated on the basis of FADN accountancy [2]. The system of collecting accountancy data FADN is a tool that helps to create Common Agricultural Policy in European Union. The FADN system is functioning in 25 countries of European Union and is the only database which collects the data from a representative sample of commercial agricultural holdings[3].

The data were acquired from the Institute of Agriculture and Food Economics in Warsaw. Each year a farmer gives all invoices and payments to advisory worker who cooperates with the Institute. The research results were acquired using the method of collection and observation of, "commercial farm having essential share in creating value-added in agriculture.[4] The farms belonging to a group generating at least 90% of the value of standard gross margin".

The main task of the research was to point out the difference in economic results in commercial holdings in Poland in the year 2004.

3. Results

The highest percentage of the sample was medium-small (32.1%) and medium-large (18.4%) farms (tab. 1). However, the average farm area in Poland was 7.9 ha in 1996. The average surveyed farm area was 19.8 ha and varied from 3.1 ha for very small farms to 111.8 ha for the largest farms. It means that the surveyed farms are, on average, almost three times larger than most farms in Poland. Most of the analyzed farms kept agricultural accounting records because their owners had taken loans and credits for farm modernization. The difference in farm area between the farms under survey and other farms in Poland was related to the production efficiency of these farms. The main reason for the low productivity of Polish agriculture is the fact that most farms use less than 5 hectares of arable land (Spychalski, 2002).

Table 1

Sample of farms according to agricultural area in 2004

Specification	Total	Very small	Small	Medium-small	Medium-large	Large	Very large
Sample farms	11 251	638	1 722	3 611	2 072	1 812	1 396
Percentage (%)	100	5.7	15.3	32.1	18.4	16.1	12.4
Average farm area in ha farmland	19.8	3.1	7.7	14.3	24.2	37.7	111.8

Source: Institute of Agriculture and Food Economics in Warsaw data.

The total output is described as the process of commodity production and is the sum of goods and services (Juchniewicz, 1999). The output value consists of the value of plant output, animal output and the value of remaining output. The estimate change in value of livestock from the basic herd which is caused by the change in prices in the accounting year is the main element of animal output. The sale of output, change of condition of stock, internal use and transfers into the household are used to calculate total

[2] The results obtained by individual agricultural holdings conducting accountancy in the year 2004. Agricultural Accountancy Department, Warsaw, 2005

[3] http://odr.zetobi.com.pl/ekonom/fadn.htm

[4] The results obtained by individual agricultural holdings conducting accountancy in the year 2004. Agricultural Accountancy Department, Warsaw, 2005

output[5]. The largest farms had the best total output, but the small and medium-small farms obtained the worst total output calculated per agricultural holding.

Family farm income corresponds to the payment for family fixed factors of production in the accounting year. The family farm income is the basic economic parameter used to estimate holding economic situation. The agricultural income is the effect of material production which is decreased by outlays and taxes (Brelik, 2001). The analysis of family farms income confirmed that the largest farms had the best economic results, whereas the worst economic results were obtained by medium-small and small farms. However, the smallest farms did not have the worst economic results (tab. 2). The reason for this situation is that their income consisted of additional external sources. Moreover, these farms achieved the smallest balance of current subsidies and taxes and balance subsidies taxes on investment. As Spychalski (2002) reported, 1,409,900 people in 1998 had other sources of income than agriculture, which suggests that additional sources of income play an important role in the development of rural areas in Poland. The search for new economic activities based on local resources seems to have helped the smallest farms to improve their income.

The worst economic results were typical for small (5-10 ha) and medium-small (10-20 ha) farms. The farms had the lowest value of total output, total intermediate consumption, gross farm income and family farm income. There are many reasons for the low productivity of Polish agriculture. First of all, the small scale of plant and animal production affects low productivity. Some farmers do not invest in machinery, technology or equipment. Some of them are not active in gaining additional funding from European Union programs. It is first of all necessary to create the right attitude in small farm owners, who are still burdened with issues from the past.

Table 2

Income per agricultural holding according to agricultural area in 2004 in PLN

Variable	Total	Very small	Small	Medium-small	Medium-large	Large	Very large
Total output	104 189	148 709	44 749	71 841	116 323	179 207	429 065
Total intermediate consumption	60 431	102 859	25 055	40 997	64 927	101 408	242 407
Balance current subsidies & taxes	2 815	325	1 117	2 054	3 702	5 646	14 503
Gross farm income	46 573	46 175	20 811	32 898	55 099	83 444	201 161
Depreciation	14 223	15 043	8 648	11 741	16 723	22 213	40 619
Farm net value added	32 350	31 133	12 163	21 157	38 387	61 232	160 542
External factor costs	4 158	7 255	1 682	2 116	3 424	5 769	27 143
Balance subsidies & taxes on investment	1 005	359	819	884	1 229	1 897	1 776
Family farm income	29 197	24 237	11 300	19 925	36 181	57 359	135 175
Family farm income per 1 ha farmland	1474.6	7818.4	1467.5	1393.4	1495.1	1521.5	1209.1

Source: Institute of Agriculture and Food Economics in Warsaw data.

[5] The results obtained by individual agricultural holdings conducting accountancy in the year 2004. Agricultural Accountancy Department, Warsaw, 2005

Polish agriculture has low production efficiency. About 38.1 percent of Poles live in agricultural areas and 18 percent of the total working population is employed in agriculture (Iwaszkiewicz, 2004). The labour sources in Polish agriculture constitute about 19 per cent of whole European Union sources. Polish agriculture creates about 3.7 percent of GNP. Large farms (above 50 ha) had the highest income per agricultural holding. There are many factors affecting family farm income, but the most important is production efficiency (Jaroszewicz, 2006).

However, an analysis of family farm income per 1 ha farmland also produces some interesting results. The smallest farms achieved the best economic results (7,818.4 PLN per 1 ha farmland), but the worst economic results were achieved by the largest farms (1,209.1 PLN per 1 ha farmland). The effect of additional source income decreases with increasing farm area (Zajdel, 2006). According to the national census in 2002, 62% of farms conducting non-agricultural activities belonged to the smaller class (1-5 ha) and they were influenced by social, economic and administrative factors.

The financial situation of Polish farms is rather difficult. As Hunek (1998) points out 10-20 per cent of Polish farms have enough financial sources to invest in fixed assets. That is why this financial obstacle prevents farms from not only investment in total assets but also from production specialization (Igiel, 2001). The lack of capital in Polish agriculture is the effect of bad education of farmers and their families. They are not active enough in looking for addition income sources. Worth mentioning is the fact that the age structure is rather good and the level of education is improving (Kapusta, 2006). The changes which took place in Polish economy have impact on agricultural holdings. It has created the differences in economy and social aspects. (Dudek, 2006). The vast majority of agricultural income comes from non-agricultural activity. The most often additional sources of income in Polish agriculture are generally pensions and work outside agriculture (Wojtasik, 2006).

The collected data has also been used to analyze the balance sheets according to agricultural area size (fig. 3). A balance sheet is a statement of the book value of a farm over a specified period of time. A balance sheet can be described as "snapshot" of the farm's financial condition on a given date. The financial balance is presented on the left side by fixed assets and current assets. Total fixed assets are calculated as the sum of agriculture land, buildings, machinery, breeding stock and other assets used in a farm more than one year. Fixed asset, also known as property, plant, and equipment, is a term used in accountancy for assets which cannot easily be converted into cash. The highest value of fixed assets was observed in the largest farms.

The analysis found that the highest value of all components of balance sheets is in very large farms (tab. 3). It is worth noting that for very small farms, the buildings were a significant part of the total assets. Fixed assets have constituted the larger part of total assets. The plant and animal production running requires good state of land, buildings, machinery and other fixed assets (Kaczmarek, 2006).

An analysis of current assets in the surveyed farms showed that large farms (23.7%) had the highest percentage of assets and medium-small farms had the lowest (9.3%). The proper management of current assets can ensure financial safety and financial liquidity (Franc-Dąbrowska, 2006). Very large farms had problems with making current assets more liquid and selling them in the market. Additionally, the sale of agricultural commodities was also a significant problem in rural areas.

Current assets are calculated by summing up non-breeding livestock and stock of agricultural products. Current assets are described as liquid assets. The highest value of current assets was in very large farms and the lowest value of current assets was in small and medium-small farms.

Moreover, the value of non-breeding livestock on very small farms was almost the same as on medium-large farms (fig. 3). It means that the intensity of animal production was quite high on these farms. However, very small farms have quite large medium-term loan and short-term loans. This means that their owners conduct investments in agricultural and non-agricultural activities by taking loans and credits. The small farms had quite large stocks of agricultural products, which means that they do not sell a significant part of their production and the vast majority of it is used on the farms as fodder.

The data also showed an increase in such financial indicators as change in net worth, average farm capital, gross investment and net investment according to farm economic size (tab. 4).

The first indicator is change in net worth. It was calculated as the value of own capital at closing valuation minus the value of capital at opening valuation. Changes in net worth are equal to changes in assets less changes in liabilities. The highest value of change in net worth was in medium-small farms and the lowest in small farms.

Table 3

Balance sheet according to agricultural area size in 2004

Variable	Total	Very small	Small	Medium-small	Medium-large	Large	Very large
Total assets	383 622	292 787	178 770	439 622	377 700	535 405	1 001 103
Total fixed assets	328 735	244 819	153 410	398 728	315 070	438 570	764 115
Land, permanent crops & quotas	111 594	24 165	27 511	216 015	53 935	77 817	176 904
Buildings	128 802	167 225	84 471	111 838	146 020	194 581	266 672
Machinery	76 364	51 783	36 687	60 168	95 917	140 059	287 831
Breeding livestock	11 975	1 647	4 741	10 708	19 198	26 113	32 708
Total current assets	54 886	47 967	25 360	40 894	62 630	96 836	236 988
Non-breeding livestock	12 189	14 670	4 914	9 690	14 690	23 408	39 405
Stock of agricultural products	21 899	7 879	11 531	17 175	26 302	38 876	95 339
Other circulating capital	20 798	25 418	8 915	14 030	21 637	34 551	102 245
Total liabilities	33 977	51 037	9 505	16 629	33 603	69 041	207 975
Long and medium term loans	24 054	39 735	6 712	11 521	23 230	50 082	142 422
Short term loans	9 923	11 302	2 793	5 109	10 373	18 960	65 553
Net worth	349 644	241 750	169 266	422 992	344 097	466 364	793 129

Source: Institute of Agriculture and Food Economics in Warsaw data.

Such economic indicators as change in net worth, gross investment and net investment were the highest in medium-small farms. Again, the worst financial indicators were achieved by small farms.

Average farm capital was calculated as the sum of livestock, permanent crops, land improvements, buildings, machinery and equipment. The average farm capital was the highest in large and very large farms.

Table 4

Financial indicators according to agricultural area size in 2004 in PLN

Variable	Total	Very small	Small	Medium-small	Medium-large	Large	Very large
Change in net worth	70 159	2 863	-2 107	177 843	6 144	19 756	59 401
Average farm capital	278 444	284 325	161 026	230 926	327 761	455 367	812 090
Gross investment	79 082	14 156	5 255	186 451	15 580	31 428	68 774
Net investment	64 859	-886	-3 393	174 710	-1 143	9 216	28 155

Source: Institute of Agriculture and Food Economics in Warsaw data.

4. Conclusions

The farms that keep accounting records in cooperation with the Institute of Agriculture and Food Economics are generally larger than the average farm in Poland. That is why they can be described as "model" farms, even though they differ in farm area and economic results.

An analysis of family farms indicated differences in family farm income per agricultural holding and family farm income per 1 ha farmland. The largest farms achieved the best family farm income per agricultural

holding, but the smallest farms achieved the best family farm income per 1 ha farmland. The survey showed the importance of additional sources of income on the smallest farms.

The data also showed that the largest farms had the highest value of fixed assets and current assets per agricultural holding, which indicates the insufficient utilization of current assets.

The economic situation of Polish agriculture depends on farms' area and their owners' profile. Tradition production is being replaced by more intensive plant and animal production. Moreover, farmers' level of education has been improving, which will have an impact on better economic situation of agriculture in Poland in the future. The age structure of Polish farmers is much better than in whole European Union farmers and old farmers sell or give their land to younger and better educated farmers.

Polish agriculture is governed by European Union rules and intervention helps to keep stability in the market. Direct payments and additional funds depending on farm's area play an important role in improving the economic situation of Polish agriculture.

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FINANCIAL ASPECT OF THE FIRMS' SUSTAINABILITY IN ESTONIAN AGRICULTURE

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Abstract

Competitiveness and sustainability are the key words in today's rural development and agriculture. The present paper uses farm-level data from the Estonian Farm Accountancy Data Network and focuses on measuring sustainable growth of agricultural firms. We determine sustainable economic growth rate for agricultural firms of different sizes and analyse the factors that influence the determination of growth. The results show that net incomes, sales turnover and the size of an agricultural firm are important factors, which determine its growth perspectives.

Key words: agriculture, sustainable growth, FADN

Introduction

Recent developments in economy and in agricultural sector actuate to raise a question how competitive the agricultural firms are. The agricultural firms have a goal to achieve sustainable growth, which is defined as increasing shareholder and societal value while decreasing the firm's environmental footprint. Sustainable agricultural firm management adopts financial, environmental and social performance in order to realise competitive advantage. From the firm's point-of-view, the concept of sustainability can be specified by means of the four characteristics: market, financial, social and environmental. The comparatively smaller size and capital intensity of agriculture has placed considerable emphasis on the financial aspect of sustainability in agricultural firms.

This paper focuses on the financial dimensions of firm growth in agriculture, and there is a purpose to apply sustainable growth technique in order to analyze to what extent the agricultural firms have had a potential to grow, while maintaining their control of the finances. The aim is to find out, to what extent the agricultural sector could achieve the economic sustainable growth. We use farm-level data from the Estonian Farm Accountancy Data Network and determine sustainable economic growth rate for agricultural firms of different sizes. Finally, we analyse the factors that influence the determination of growth.

The literature of concern in this paper is that dealing with the growth of firms and the financial sustainability. It is possible to attain fast growth increasing financial leverage. Financial leverage influences a firm's growth through its effects on the expected returns to equity capital. Increasing financial leverage will boost the growth in equity as long as the marginal returns from the use of loan exceed the cost of borrowing. But one factor working against higher financial leverage is the increase in the financial risk. Therefore, growing too fast can be dangerous to firm's health (Barry et al 2000). Previous studies of differences in business growth of agricultural firms that emphasized the complementarities of operational and capital management strategies in general (Escalante et al 2002). Mcmahon (2001) found financial profiles unremarkable by comparing and contrasting financial profiles of small and medium-sized enterprises in the Australian manufacturing, and examining possible connections between enterprise growth and the experience of common financial problems. Studies on growth potential, firm's size and efficiency have found that the size of a farm is an important factor, which determines its efficiency (Lund et al, 1998). Burger (2001) and Gorton et al. (2003) find generally, that profitability increases with farm size.

The previous research reached to different and sometimes indistinct results. The following hypotheses are tested in this study:

1) Large agricultural firms have more opportunities to grow using their own internal funds i.e. grow without using external financing.
2) Agricultural firms' growth varies year-on year.

In the following sections discussion of the study's background of the data is described, conceptual base is provided, features of the farm database is described, and the results of the analysis are reported.

For analysing agricultural firms' growth, the data of the survey of the Farm Accountancy Data Network (FADN 2005) for 2000-2004 were summarised. According to the FADN database, the farms were grouped by average utilised agricultural area. The farms were divided into 4 groups of farms: 0-40 ha; 40.1-100 ha; 100.1-400 ha, and over 400 ha.

The term growth refers to increases in business size. The principle of the firm growth process is acquiring the control of additional sources that generate returns in excess of their costs and add to the value of the firm. Rates of growth refer how fast changes in size occur over the time. Several types of growth measures are possible. The measures may be financial or physical and may focus on inputs or outputs. Financial measures provide for more useful comparisons among farms with different operating characteristics (Barry et al 2000).

Sustainable growth would be a realistic attainable growth that a firm could maintain without issuing additional equity; it is the maximum growth rate that a firm can sustain without having to increase financial leverage. It would be the realistic attainable growth that a firm could maintain without running into financial problems.

The relationship between financial structure and firm performance can be expressed in a simple conceptual model. The conceptual framework for analysing the combined effect of profitability and turnover ratios is described by the DuPont profitability model. By modifying the approach a bit, it is possible to estimate firms' sustainable growth, i.e. firm's financial ability to continue growing at its present level. (Van Horne, 2004)

$$G = (1-d) \times \frac{S}{A} \times \frac{NI}{S} \times \frac{A}{E} \qquad (1)$$

In this linear profitability model G is sustainable growth measure, expressed as a farm's expected rate of growth of equity capital; d is firm's dividend rate; S is sales; I is net income; A is total assets; E is owner's (stockholders') equity.

Net income is key to managing growth, because it not only enables to provide security and opportunity, but it allows to remain independent – growth can be funded without seeking outside capital.

Results and discussion

The farms included in this study are divided into four groups according to the average of their utilised agricultural area. Average values and standard deviations of the financial variables are reported in table 1 for the respective area groups.

Table 1

Main Indicators of financial factors of growth by FADN farms in different size groups, 2000-2004

	0-40	Stdev	40,1-100	Stdev	100,1-400	Stdev	400,1-…	Stdev	Average
S/A	0.449		0.376		0.463		0.594		0.470
		0.007		0.033		0.078		0.185	
NI/S	0.217		0.282		0.318		0.113		0.232
		0.032		0.070		0.104		0.090	
A/E	1.152		1.110		1.208		1.296		1.192
		0.075		0.034		0.059		0.089	

(*Source: FADN 2005*)

Table 1 indicates the average values and standard deviations of sales-to-assets ratio, net income-to-sales ratio and assets-to equity ratio by the area groups of 0-40 ha, 40,1-100 ha, 100,1-400 ha, and 400,1-…ha. According to the data and using the equation (1) sustainable growth rate is calculated for each group.

Figure 1 presents the five-year trends of the calculated average agricultural firms' sustainable growth for farms in four size groups: 0-40 ha; 40.1-100 ha; 100.1-400 ha, and over 400 ha.

The plot shows an overall volatility in farms' sustainable growth rate for all sample groups during the five-year period.

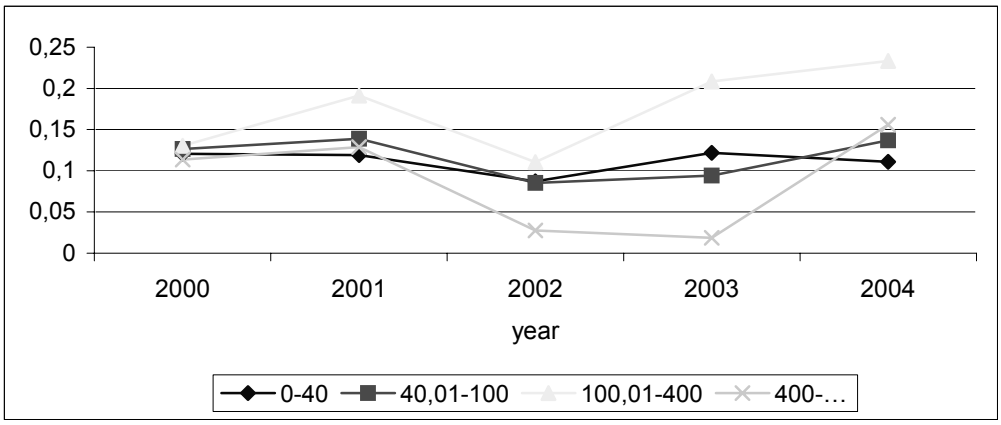

Figure 1. Sustainable growth rate by utilised area: Estonian agricultural firms, 2000-2004

Sustainable growth rate in the group 400.01 ha and more hectares increased rapidly in 2004. In spite of the sharp decline in sustainable growth level in 2002 and 2003, the farms with area over 400 hectares achieved 15.6% growth rate in 2004. An analysis of the relationships between sustainable growth rate and various financial indicators identifies the reasons associated with such trend. The decline occurred mainly because of intensive investments that were subsidised to a great extent. As a result of increasing subsidisation during these years the farms' sales-to-assets ratio and net-income-to-sales decreased.

The highest sustainable growth rate is in the group 100.01-400 ha. These farms are able to achieve the highest growth levels, extending up to 23.3%. Sustainable growth rate 23% in year 2004 means that if firms in this group maintain a growth rate of about 23%, their financial leverage will stay in balance. A higher growth rate would force them to increase their debt ratio. A lower growth rate would allow them to reduce their debt ratio. The decline in sales-to-assets ratio caused the decline in sustainable growth rate on the 2002. The overall growth perspectives for this group of agricultural firms are good.

Agricultural firms with less than 100 hectares are not able to attain more growth than 10-14% without changing their financial structure.

The 0-40 ha and the 40.1-100 ha farms are the most stable in their growth. The rate remains between 8.5% and 13.7% during the five-year period. The level of the rate indicates that the opportunities for further development are relatively limited.

An explanation for the findings of this study is that the overall growth perspectives for the group of agricultural firms 100.01-400 ha are sufficient. These agricultural firms are able to achieve the highest growth levels, compared to other size groups. As expected, higher average utilised area tend to be associated with higher growth possibility. This is consistent with earlier studies by Hadri et al., 1999. This indicates the complexity of identifying optimal farm size.

From time to time, firms may run into trouble unless they control their growth. Growth can be orderly or it can be unrestrained. Unrestrained growth can lead to less than optimal performance or even financial distress.

If sustainable growth is less than actual growth over a long period, the firm cannot sustain such activity without additionally financing that growth. Either they need to put more profits into the firm, increase net profit margin or turnover performance, or additionally finance it from risky sources, such as increasing the debt level.

Conclusions

According to the results of the analyses we can conclude, that large agricultural firms (100.01 ha and more) have more opportunities to grow using their own internal funds i.e. grow without using external financing. Sustainable growth rate in small agricultural firms (0-100 ha) have been in the stable low level during the period 2000-2004, and this tendency will most likely continue during the next periods.

As a comment to the current results it should be mentioned that future analyses of firms according to size groups require accurate consideration of the circumstances of the firms examined and of the possibility that firm's size could change with time as the firm grows. The growth perspectives will likely change over the period. Taking account of the general trend of the EU policy towards minimisation of subsidies and decoupling of production in the future, the present situation can only be approximate basis for predicting the sustainability perspectives of the agricultural sector. A number of influences could account for this. First, the government has to pursue policies and programs intended to improve business conditions to agricultural firms. Second, education and training may change managers' attitudes towards the outcomes of managerial action.

The implication arising from this research is that the financial constraints are only one of a number of possible constraints in estimating firm's growth potential. For a firm to grow, there has to be sufficient demand for the products offered. The firm must have the organisational capacity to grow at the desired rate, including the ability to hire employees and scalable processes to manage higher volumes. This is the set of complex issues that might be analysed in more sophisticated methods.

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REGIONAL DIFFERENTIATION IN ORGANISATION, PRODUCTIVITY AND ECONOMICS OF FARMS IN POLAND AND IN GERMANY

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Abstract

The paper presents the variety of ways farms are organised, their productivity and economic situation on a regional basis in Poland and in Germany. Poland was divided into regions, whereas the analysed units in Germany were "Lands". The analysis was carried out for those units in the period 2002-2003.

As far as the area, labour resources and assets held are concerned, the variety of farms in German lands is greater than within the particular Polish regions.

Differentiation of agriculture and farms in terms of whole countries with a relatively different area is not unusual, being conditioned historically, economically and socially. It seems the phenomenon is quite common. We can assume that economic policy with regard to agriculture should not concentrate on convergence. Instead, it should be supportive of development utilising the existing conditions in a given region.

Key words: private farms, agricultural market output, income of farms, labour resources

Introduction

Many internal and external factors in the surrounding environment influence the activities of enterprises, including farms. External conditions are subject to continuous change, which forces the production units to adapt accordingly. The different conditions in which farms operate act in various manners reflect upon their organisation, productivity and economic results. A key role is played by the local situation in the country's particular regions. Poland has a significant regional differentiation of agrarian production. This is determined by several reasons. We can say that the reasons for differentiation lie in varied natural conditions, the agrarian structure, production equipment, differences in growth and development processes, the influence of economic policy, customs and the level of farm culture, as well as historical influences [Runowski, 1990]. However, significant regional differences can be observed outside our country, too. It is similar in Germany, where particular regions once constituted independent countries with a different history, religion, resources and socio-economic conditions.

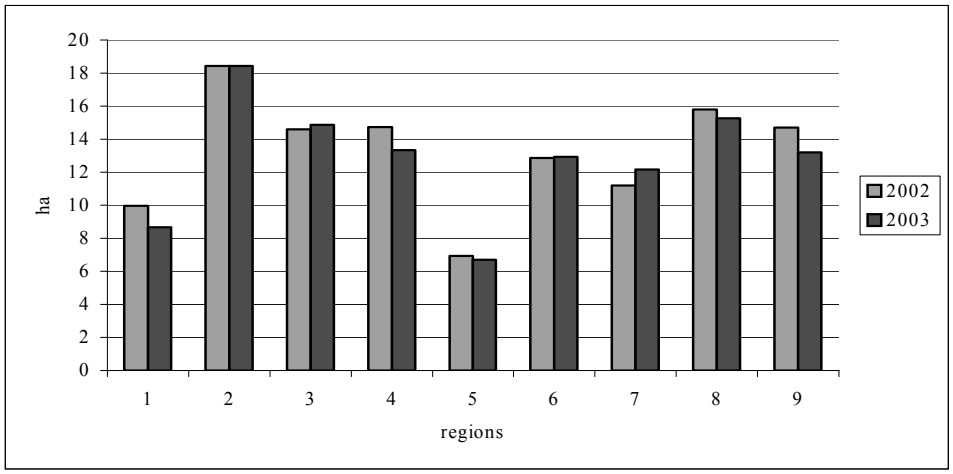
The object and methods of research

The object of this paper is the presentation of the variety of ways farms are organised, their productivity and economic situation on a regional basis in Poland and in Germany. Poland was divided into regions (9 regions), whereas the analysed units in Germany were "Lands" (13 Lands).

In Poland, the analysis was carried out for those units which in the period 2002-2003 had to keep accounts for the use of IERiGŻ. 158 farms, keeping accounts continuously, participated in the analysis. This allowed for the preparation of a mainly horizontal analysis within the studied objects.

Farm resources

In analysing the production resources the following were taken into account: the land area, labour resources and the value of assets. Figure 1 presents the farm areas in Poland in the period 2002-2003, in particular regions.



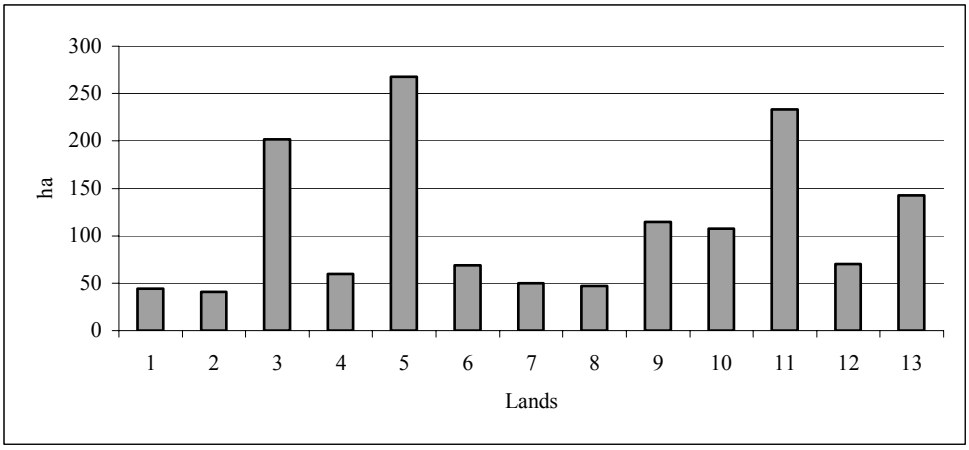
Regions: 1-Capital, 2-North-Eastern, 3- Northern, 4-Southern, 5-South-Eastern, 6-Mid-Eastern, 7-Middle, 8-Mid-Western, 9-South-Western

Figure 1. Average area of analysed farms in Polish regions

Source: Own studies.

The average area of the analysed farms in particular Polish regions exceeded the national average (with the exception of the South-Eastern region). There is a clear regional differentiation. Farms in the region with the highest UR area (North-Eastern, exceeding 18 ha), were almost 2.5 times the size of those in the region with the smallest area (South-Eastern). The 1990s saw a significant increase in the area of farms in all regions (about 50% between 1990 and 2001)[1]. There is a tendency to increase the size of farms, yet even in this aspect we see large regional differences.

Comparing regional differentiation relating to the farm areas in Poland and Germany, we can establish the fact that the differences between Lands in Germany are much bigger (Figure 2).



Lands: 1-Baden-Württemberg, 2-Bayern, 3-Brandenburg, 4-Hessen, 5-Mecklenburg-Vorpommern, 6-Niedersachsen, 7-Nordrhein-Westf, 8-Rheinland-Pfalz, 9-Saarland, 10-Sachsen, 11-Sachsen-Anhalt, 12-Schleswig-Holstein, 13-Thüringen.

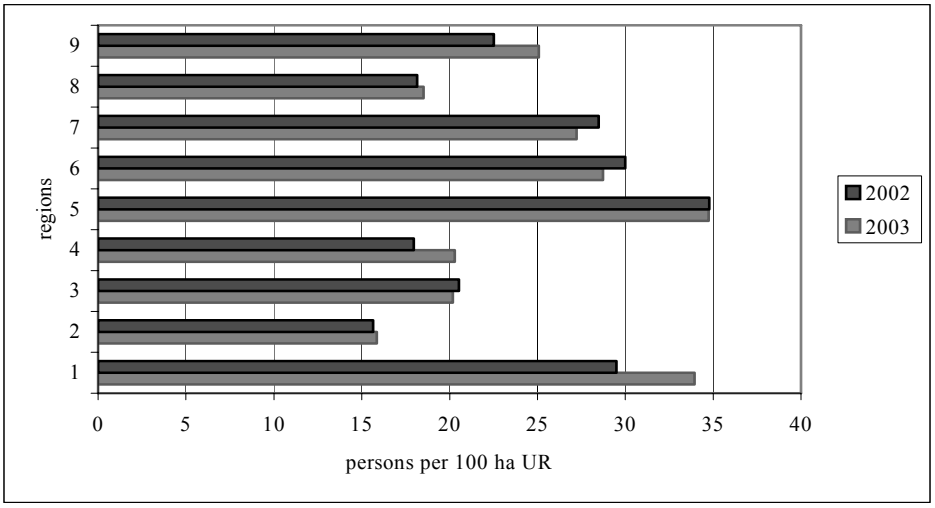
Figure 2. Average area of analysed farms in German Lands in the period 2002/2003

Source: Buchführungsergebnisse der Testbetriebe. Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft. Daten-Analysen 2004.

[1] Klepacki B., ed. 2005: Processes of Adapting Agro-Enterprises to a Market Economy. Publ. Wieś Jutra, Warsaw.

The average farm area in the period 2002/2003 in Germany was around 64.2 ha UR[2]. However, in three Lands, the average area was in excess of 200 ha, the Lands being Brandenburg, Mecklenburg-Vorpommern and Sachsen-Anhalt. The differentiation is thus significant. The average farm area in these three Lands was almost four times the size of those in other Lands.

Labour resources per 100 ha UR (calculated as the number of persons within productive age) in particular Polish regions were also differentiated (Figure 3).



Regions: 1-Capital, 2-North-Eastern, 3- Northern, 4-Southern, 5-South-Eastern, 6-Mid-Eastern, 7-Middle, 8-Mid-Western, 9-South-Western

Figure 3. Number of persons within productive age per 100 ha UR in Polish regions

Source: As in Figure 1.

The lowest number of persons per 100 ha UR were employed in the Northern part of the country. In this case, the North-Eastern region was singled out, as the number of employed persons per 100 ha UR came to around 15. On the other hand, the largest rate of employment can be seen in the South-Eastern region (35 persons per 100 ha UR). The 1990s and the year 2000-2001 saw a decline in the number of persons per 100 ha UR[3] employed in the particular regions. Then again, in 2003 we observed a significant increase of persons within productive age per 100 ha UR in three regions. Such a situation arose in the Capital, Southern and South-Western region.

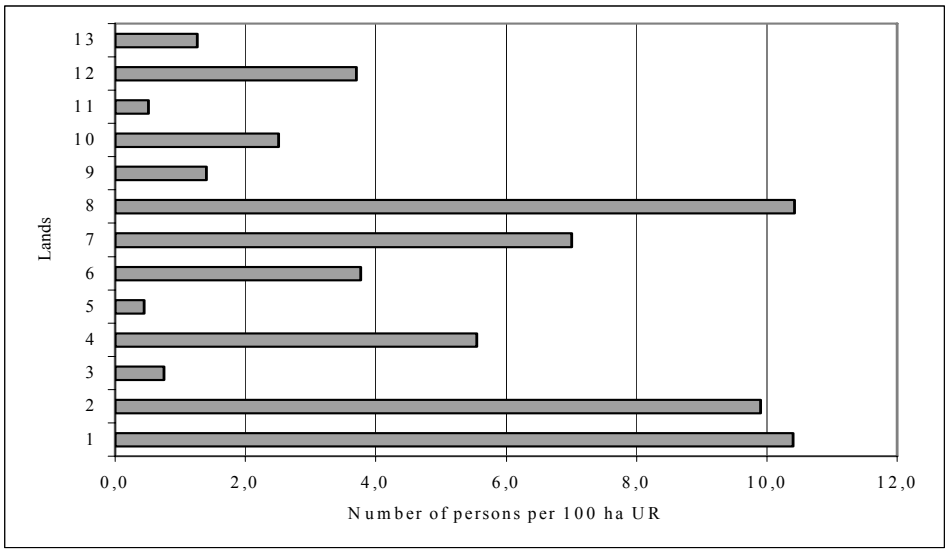
Employment per 100 ha UR in Germany was significantly lower than that in Poland, and in 2002/2003 was approximately 3.2 persons. However, the differentiation between Lands was far greater than that between regions in Poland. In Germany, we are able to distinguish Lands where employment is below 1 person per 100 ha UR, but there are regions where it is in excess of 10 persons. The 25-fold difference between Baden-Württemberg, or Rheinland-Pfalz, where employment on farms was the highest, and Mecklenburg (with the lowest rate of employment) is exceptional. Naturally, the rate of employment is strictly related to the area of farms. The larger the farm, the fewer persons it employs.

The assets of farms are, to a large extent, an indication of their production capacity and economic strength. The total value of assets in analysed farms per 1 ha UR is depicted in Figure 5.

The highest asset value per 1 ha UR was held by farms in the Capital, Southern and South-Eastern region. As proven in earlier studies, farms in the Southern and Mid-Western region witnessed the largest accumulation of assets since 1994, which was due to a significant accrual of current assets[4]. The largest differences are to be seen between the Capital and Northern regions. The value of assets per 1 ha UR of farms in the Capital

[2] Buchführungsergebnisse der Testbetriebe. Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft. Daten-Analysen 2004.
[3] Klepacki B., ed. 2005: Processes of Adapting Agro-Enterprises to a Market Economy. Publ. Wieś Jutra, Warsaw.
[4] Klepacki B., ed. 2005: Processes of Adapting Agro-Enterprises to a Market Economy. Publ. Wieś Jutra, Warsaw.

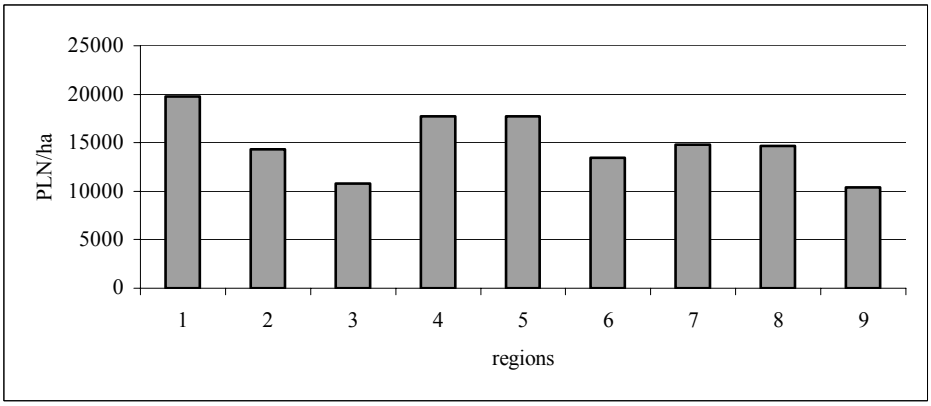
region was almost double that of those in the Northern region. In regions with smaller farm areas, the farms were better equipped with fixed and current assets per 1 ha UR. However, the differences in asset values of farms in regions of Poland were not as important as in the case of the German Lands (Figure 6) and being equipped with fixed and current assets in our country was not always so strictly correlated with the area of farms.



Lands: 1-Baden-Württemberg, 2-Bayern, 3-Brandenburg, 4-Hessen, 5-Mecklenburg-Vorpommern, 6-Niedersachsen, 7-Nordrhein-Westf, 8-Rheinland-Pfalz, 9-Saarland, 10-Sachsen, 11-Sachsen-Anhalt, 12-Schleswig-Holstein, 13-Thüringen.

Figure 4. Labour resources per 100 ha UR in German Lands in the year 2002/2003

Source: As in Figure 2.

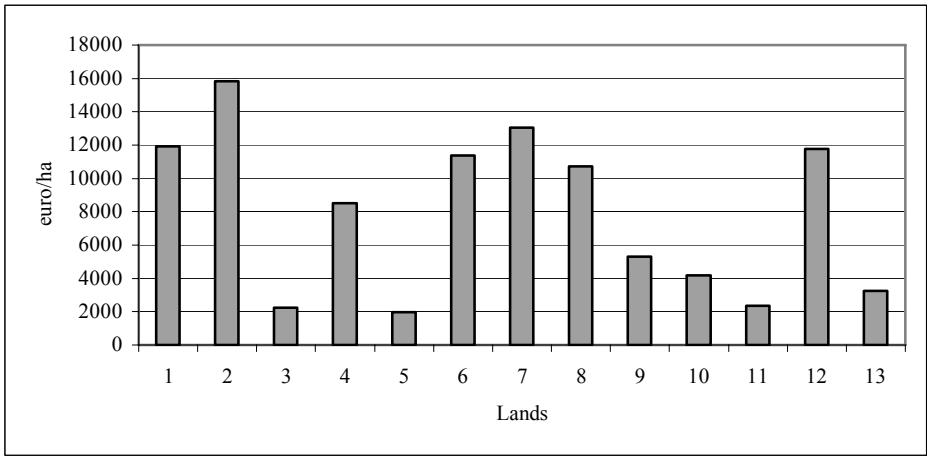


Regions: 1-Capital, 2-North-Eastern, 3- Northern, 4-Southern, 5-South-Eastern, 6-Mid-Eastern, 7-Middle, 8-Mid-Western, 9-South-Western

Figure 5. Average value of assets of Polish farms per 1 ha UR in 2003

Source: As in Figure 1.

The highest value of assets per 1 ha was held by farms in such Lands as: Bayern and Nordrhein-Westfal. The lowest value was found in Lands having the largest farm areas, i.e. Brandenburg, Meklemburg, and Sachsen-Anhalt. These correlations can be seen in all Lands. The larger the area of farms, the lower the value of assets per 1 ha. In Polish farms, these correlations were not so vivid. The differences between the value of assets of farms in those Lands, and Lands with the highest asset value were in excess of 600%, which goes to show a major differentiation between the particular Lands.



Lands: 1-Baden-Württemberg, 2-Bayern, 3-Brandenburg, 4-Hessen, 5-Mecklenburg-Vorpommern, 6-Niedersachsen, 7-Nordrhein-Westf, 8-Rheinland-Pfalz, 9-Saarland, 10-Sachsen, 11-Sachsen-Anhalt, 12-Schleswig-Holstein, 13-Thüringen.

Figure 6. Value of assets in German Lands in euro/ha in 2002/2003

Source: As in Figure 2.

Differentiation of productivity results in farms

Engaging farm resources and expenditure bears fruit in the form of a certain agrarian production capacity. Table 1 depicts the total value of agricultural production and plant and stock production of analysed farms.

Table 1

Value of production in analysed farms in Polish regions

Regions	Production [PLN] in the years:			
	2002		2003	
	Per farm	Per 1 ha UR	Per farm	Per 1 ha UR
1-Capital	38082.0	3818.3	44888.2	5176.2
2-North-eastern	70276.1	3811.1	80727.4	4377.9
3- Northern	59558.5	4076.9	69988.9	4708.1
4- Southern	65686.4	4457.4	93344.3	7002.3
5- South-Eastern	17916.6	2578.2	17337.7	2581.3
6- Mid-Eastern	50532.2	3929.8	52801.9	4084.6
7- Middle	42952.8	3838.9	45284.4	3722.1
8- Mid-Western	73776.2	4668.0	80438.1	5269.8
9- South-Western	63854.8	4346.6	54731.9	4150.2

Source: As in Figure 1.

The highest total value of production in 2002 was attained by farms in the North-Eastern and Mid-Western regions, whereas in 2003 a more favourable situation occurred in the Southern region. In this respect, the worst turned out to be the South-Eastern region, where the achieved production value was nearly five times smaller than that in the Southern region. The case was similar with respect to the value of production per 1 ha UR. The highest value calculated in such a manner was also achieved by farms in the Southern and Mid-Western regions.

There is also a large differentiation in the value of income per 1 ha in German Lands (Figure 7). The differentiation of income per unit area was greater in Germany than in Poland. Peripheral values differed almost four times, whereas in Poland – around twice in 2002 and three times in 2003.

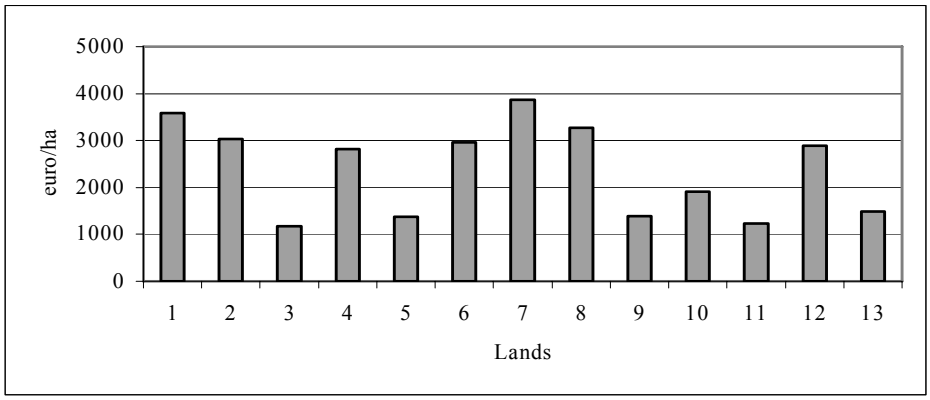


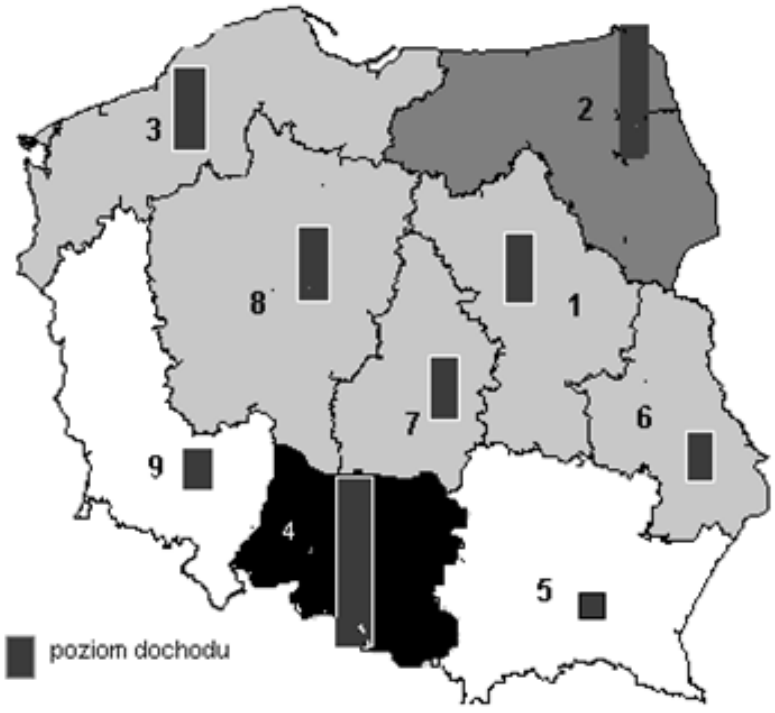
Figure 7. Value of income per 1 ha of farms in German Lands in the year 2002/2003

Source: As in Figure 2.

Income of farms

The goal of agricultural produce is determined by the size of farms (the smaller the farm, the larger the share of self-supply) on the one hand, and by the farmer's opportunity to obtain an income satisfying him and his family on the other. Map 1 depicts the average income achieved by farms in the studied regions in 2003.

Farm income in particular regions varied significantly. The lowest income in both studied years was gained by farmers in the South-Eastern region. It was almost six times lower than that of farmers in the North-Eastern region, which had the highest level of income. This was largely connected with the area of farms. Another reason for the differences may be the level of technological development, it being high in, for example, the Southern and Mid-Western region.



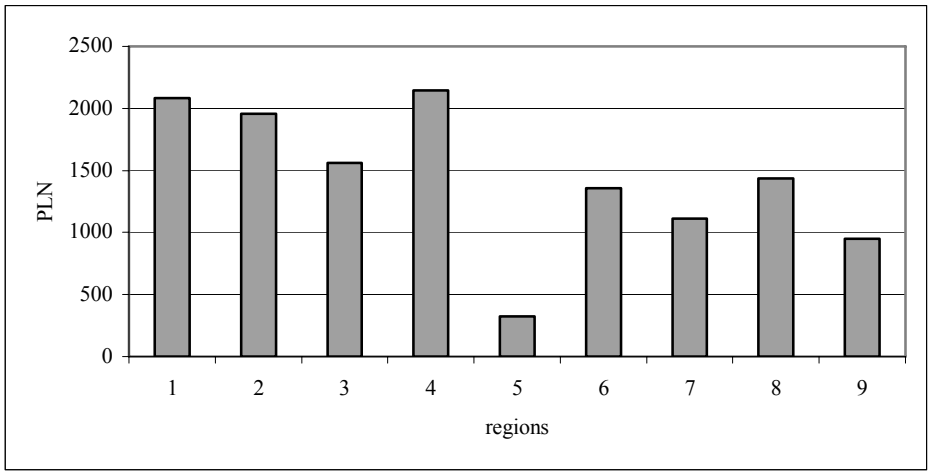
Regions: 1-Capital, 2-North-Eastern, 3- Northern, 4-Southern, 5-South-Eastern, 6-Mid-Eastern, 7-Middle, 8-Mid-Western, 9-South-Western

Figure 8. Income derived from a family farm in Poland in 2003

Source: As in Figure 1.

The situation was similar when calculating farmers' income per 1 ha UR (Figure 8). Farmers' income per 1 ha UR in particular regions varied on average from 500 PLN in the South-Eastern region to around 2,000 PLN in the Southern, Northern and North-Eastern regions. The lowest income was found in the South-Eastern region (where the farms are smallest in area).

This is a new situation, for up to now it was the other way around: the lowest income per 1 ha in the 1990s was derived in the South-Eastern regions – where farms had the largest UR [Klepacki et al., 2005]. The principle stating that income per unit of area declines with the increase in area seems to have lost its validity at the end of the 20th century. Currently, a high rate of income per 1 ha can be seen in both relatively large farms, as well as average farms.



Regions: 1-Capital, 2-North-Eastern, 3- Northern, 4-Southern, 5-South-Eastern, 6-Mid-Eastern, 7-Middle, 8-Mid-Western, 9- South-Western

Figure 9. Farmers' income per 1 ha UR in regions of Poland in 2003

Source: As in Figure 1.

A similar differentiation with respect to derived income was shown by German Lands. Table 2 depicts profit derived per farm and per 1 ha UR.

Table 2

Results of farms in German lands in the year 2002/2003

Lands	Profit per farm [euro]	Profit per 1 ha [euro]
Baden-Württemberg	29472	666
Bayern	23341	578
Brandenburg	31331	156
Hessen	25961	436
Mecklenburg-Vorpommern	47318	177
Niedersachsen	25364	368
Nordrhein-Westf.	26520	530
Rheinland-Pfalz	32662	696
Saarland	34280	299
Sachsen	28044	261
Sachsen-Anhalt	40384	173
Schleswig-Holstein	31092	443
Thüringen	27905	196

Source: As in Figure 2.

Germany also does not display full correlation – larger farms – lower income per 1 ha, although in certain Lands the trend is still vivid (e.g. Meklenburg or Sachsen). Generally speaking, the level of income varies between Lands both per farm and per 1 ha.

Conclusions

The studies allow for the statement that Polish and German agriculture varies with regard to area. The differentiation concerns resources, organisation and production capacity and economic results.

As far as the area, labour resources and assets held are concerned, the variety of farms in German lands is greater than within the particular Polish regions. The situation relating to economic results is similar.

The phenomenon of differentiation of agriculture and farms in terms of whole countries with a relatively different area is not unusual, being conditioned historically, economically and socially. It seems the phenomenon is quite common. We can assume that economic policy with regard to agriculture should not concentrate on convergence. Instead, it should be supportive of development utilising the existing conditions in a given region.

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SUGAR SECTOR AND VARIOUS ASPECTS OF ITS REFORM'S IMPLEMENTATION IN LATVIA

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Abstract

Sugar sector has long-standing history in Latvia. After accession to the EU, two sugar-refineries received annual sugar quota of 66.5 thousand tons. However, in 2006/2007 sugar-producing season the quota was decreased by 8.6%. Sugar quota allocated to Latvia comprises 0.4% of total EU sugar quota, but 61% of the sugar within the quota is produced by 4 EU countries – France, Germany, Poland and Italy. In order to fulfill the quota, Latvia has been cultivating sugar beets in the area of 13.5 thousand ha, which is 1.3% of total volume of agriculture crop. From the above-mentioned land area were harvested 520 thousands tons of sugar beets, which forms 6.8% of total crop production value.

European Union (EU) Common Agriculture Policy (CAP) is continuously changing. Although the reforms in the sugar sector have not taken place more than 40 years, it has been fully regulated sector with stabile production output and prices. This policy does not confirm to the principles of World Trade Organization (WTO) and are disruptive to the world market. Therefore, EU has approved far-reaching reform in the sugar common market. The essence of the reform is to decrease the sugar prices by 39% and its production by a third, cancel intervention measures, and based on the voluntary principles to pay out certain compensations, which would not be linked to the production.

In December 2006, Latvian sugar-refineries had adopted the decision about complete restructuring, foreseeing to dismantle all equipment and to forgone sugar quota, in order to receive restructuring payments. However, the liquidation of this sector will have direct impact on approximately 600 employees in sugar-refineries and around 390 farms, which are growing sugar beets. Implementation of the Reform has also other direct and indirect social economical impacts, which have not been accurately evaluated.

Key words: sugar, quota, beets, restructuring, reform.

Introduction

Sugar industry in Latvia has 80 years long history. Since accession to the EU, sugar industry in Latvia has been regulated according to the principles of CAP sugar common market organization. It means that in accession negotiations reached agreement about sugar production quota for Latvia was divided between two sugar-refineries. Based on quota given to each sugar –refinery, the fixed price contracts have been concluded for sugar beets supply with sugar beets producers.

However, EU implemented sugar policy is disruptive to the market, because it is holding unnaturally high sugar prices. Overall, in the industry persists overproduction, consumption decreases and WTO has significant objections regarding to this EU sugar policy. Due to aforementioned, EU sugar reform was developed. It incorporates several substantial conditions for price reduction and reduction in produced volume, while receiving attractive compensations. Each EU Member State have to decided when and how to implement this reform, because the most favourable condition for receiving compensations are offered in first two years – 2006 and 2007, in the next two reform implementation years size of compensation will decrease significantly (EU Council Regulation No 320/2006). Latvia State Institute of Agrarian Economics (LSIAE) has carried out research about possible developments of sugar industry, due to which sugar–refineries have decided for restructuring.

Goal of the research is to assess what are the main indicators of sugar production, sugar beets cultivation industry and to forecast potential social economical consequences of sugar reform.

To achieve aforementioned goal following **tasks** were set:

1. to evaluate and analyze sugar processing industry;
2. to analyze the main indicators of sugar beets cultivation;
3. to determine potential consequences of sugar reform in Latvia if sugar industry would be entirely liquidated.

In order to solve the tasks, **following methods** of analysis, statistic calculations, synthesis and logical construction have been applied.

In research, authors used normative documentation of European Council and Latvia, informative materials of Ministry of Agriculture about situation in industry, special literature and researches of sugar industry by other authors.

Results and discussion

1. Characteristics of sugar market in Latvia

Currently there are two main involved parties – sugar beets farmers and sugar producers, that is, two sugar-refineries - "Jelgavas cukurfabrika" Ltd and "Liepājas cukurfabrika" Ltd. Since accession to the EU Latvia has a fixed sugar production quota divided between these two sugar-refineries, which can be observed in Table 1.

Table 1

Sugar quota and its allocation between Latvia sugar-refineries

Indicators	2004/2005 and 2005/2006		2006/2007	
	tons	%	Tons*	% to 2005/2006
Sugar production total quota	66505	100	60765	91.4
Ltd "Jelgavas cukurfabrika"	41655	63	38073	91.4
Ltd "Liepājas cukurfabrika"	24850	37	22592	91.4

* Authors' calculations, considering settled cut in the quota

Source: Ministry of Agriculture 2005, 2006, Leta, 2006 and authors' calculations.

Allocated quantity of sugar production quota for Latvia for the first two years after accession to the EU had been constant – 66.5 thousand tons – from which almost 2/3 were produced by "Jelgavas cukurfabrika" Ltd and a little more than 1/3 – by "Liepājas cukurfabrika" Ltd. In sugar producing season 2006/2007, originally allocated fixed quota was 66505 tons, but it had to be decreased by 5740 tons or 8.6% (Leta, 2006)

EU total quota of white sugar production for 2006/2007 is 17.44 million tons (EU Council Regulation Nr. 318, 2006) therefore the amount of sugar produced in Latvia is not substantial - only 0.4% of total.

The major sugar producing countries in the EU are France with 3.77 million tons or 21.6% of total amount, Germany with 3.4 million tons or 20%, Poland with 1.67 million tons or 10 % and Italy with 1.56 million tons or 9% or total volume of sugar quota. Thus, these four countries produced 61% of total EU sugar. Sugar is produced by 21 of 25 EU member states (Council Regulation Nr. 318, 2006), except Luxemburg, Estonia, Malta and Cyprus.

2. Main characteristics of sugar beets sector in Latvia

In order to analyze and assess economical development of sugar beets industry authors used data from Economic Accounts of Agriculture (EAA). Within EAA framework has been defined the total value of production produced in agricultural sector. It has been calculated using following formula:

$$\sum SPV_{LN} = \sum(\sum AP_n \times P^n_{AP}) \qquad (1)$$

where $\sum SPV_{LN}$ – total value of production produced in agricultural sector

$\sum AP_n$ – quantity of the crop n farming product production
P^n_{AP} – price of crop n farming product

Produced production is measured at their market prices, meaning in prices, which producers receive when they sell their productions. In addition to which subsidies are added and taxes are subtracted for the particular product. (Vēveris A., Dambiņa L., Miglavs A., 2001)

Value of production what is produced by sub-sectors of agriculture in 2001 – 2005 is presented in table 2.

Table 2

Agriculture sector production value and characteristics in Latvia

Indicator/ years	2001	2002	2003	2004	2005	2005/ 2001 %
Crop production value (millions Ls)	125.9	153.6	172.6	208.5	240.2	190.8
Chain increment %	*x*	*122.0*	*112.4*	*120.8*	*115.2*	*x*
Sugar beets value (millions, Ls)	9.6	12.0	9.4	14.3	16.3	169.8
Chain increment %	*x*	*125.0*	*78.3*	*152.1*	*114.0*	*x*
Fraction of sugar beets in crop production total value	7.6	7.8	5.4	6.9	6.8	89.5
Chain increment %	*x*	*102.6*	*69.2*	*127.8*	*98.6*	*x*
Fraction of sugar beets agricultural production value	3.1	3.5	2.5	3.1	3.1	100.0
Chain increment %	*x*	*112.9*	*71.4*	*100.0*	*100.0*	*x*
Value of agriculture production (millions, Ls)	310.2	341.1	370.4	448.3	526.3	169.7
Chain increment %	*x*	*110.0*	*108.6*	*121.0*	*117.4*	*x*

Resource: Ministry of Agriculture, 2003, 2005 and author's calculations

Occurred structural changes in sugar beets cultivation in accounting period were estimated using following equation:

$$\Delta S_p = \left(\frac{AN_1^i}{AN_0^i} - 1\right) \times 100\%, \qquad (2)$$

where ΔS_i – sugar beets cultivation structural changes in accounting period in crop farming/ agriculture sector.
AN^i_1 – fraction of sugar beets cultivation in crop farming/ agriculture sector at the end of accounting period
AN^i_0 – fraction of sugar beets cultivation in crop farming/ agriculture sector at the beginning of accounting period

In Table 2 summarized data shows that total value of agriculture production in time period has increased 1.7 times, however, value of crop farming production has grown faster – increased 1.9 times, therefore the fraction of crop farming production value has risen from 40.6 % in 2001 to 45.6% in 2005 in total value of agricultural production. However, this rise has happened based on other crop farming production, but not due to changes in sugar beets. This can be concluded, because value of sugar beets in absolute numbers has risen accordingly with general rise in the value of agricultural production, but its fraction value of crop farming has decreased by 11.1% and comprises 6.8 % of total crop farming production value. Whereas in agricultural industry sugar beets value measured as fraction persistently remains constant and represents comparatively small fraction – just 3.1 % of total value.

Comparing summarized chain increment rates together in agriculture and crop farming in Table 2, can be concluded that the rates have been persistently increasing in the given time period. However, in sugar industry was observed sharp drop in 2003, which the industry overcame in 2004. Reason for the drop most likely can be attributed to the accession of Latvia to the EU in the matter that industry was enjoying CAP common market organization implemented and influenced stable politics with predetermined sugar production quotas and prices.

Following mathematical equation was obtained by using linear mathematical model to justify the value changes of dynamic rows of the sugar beets production:

$$y = 1.57x + 7.61 \text{ with } R^2 = 0.6888 \qquad (3)$$

Thus, using this equation with 69% accuracy it is possible to forecast how will change growth of sugar beets value in future.

3. Quantitative indicators of sugar beets cultivation

Sugar beets cultivation is basis for sugar industry existence in Latvia and its characteristic indicators are summarized in Table 3.

Table 3

Characteristic indicators of sugar industry

Indicator/ years	2001	2002	2003	2004	2005	2005/ 2001 %
Sugar beets area (thousand ha)	14.1	15.9	14.4	13.8	13.5	95.7
Fraction of sugar beets area in total sowing area %	1.6	1.8	1.7	1.4	1.3	81.3
Total crop of sugar beets (thousand tons)	491.2	622.3	532.4	505.6	519.9	105.8
Productiveness of sugar-beets (t ha $^{-1}$)	34.8	39.1	37.0	36.6	38.5	110.5
Price of sugar beets (Ls t $^{-1}$)	19.54	19.28	17.66	28.28	31.35	160.4

Source: (Kaufmane E. and others, 2006)

Table 3 demonstrates that during observed periods sugar beets area is consistently decreasing, but total crop volume fluctuates, because of variations in the productiveness of sugar beets. Sugar beets price has risen substantially after accession to the EU, because beforehand in the industry was tendency of price cuts even to 17.66 Ls t $^{-1}$.

By using regression model, we tried to clarify:

1. if productivity of sugar beets will influence price;
2. if sugar beets total crop will affect sugar beets price, which will be appropriate to economic theory regarding demand and supply relationship in free market situation.

In the case of the first hypothesis - productivity of sugar beets can not be used to forecasting price, because $R^2 = 6$ % and significance F coefficient for this model exceed 5% and is 69%. Its mean that in 69 % of cases using model of regression for regression of productivity of sugar beets to forecast future price, results will be less objective than using average price of sugar beets to forecast future price.

In the case of the second hypothesis situation is a little better because $R^2 = 12$ % and significance F coefficient for this model is 57%, however, this model as well cannot be used to forecast prices. A local market regulated in framework of EU CAP especially in sugar industry does not permit the general laws of the market to influence the industry.

It means that until now EU CAP is holding sugar prices three times higher than world prices, which led to the large stock amount of sugar, which were exported to developing countries. This generates the necessity to restructure this industry (Browne A., 2005).

4. Essence of the reform in the sugar industry and possible consequences for national economy

After CAP reforms in 2003 and 2004 the time has came to rearrange sugar regime to have appropriate approach with the ones that are accept in other industries. By carrying out sugar reform, it is necessary to balance the incomes of farmers, consumers' interests and situation in processing industry. Tasks of reform are to sustain competitiveness of sugar industry, to improve market orientation and to create persistent market balance in accordance with the EU international liabilities. General EU sugar reform conditions are:

1. 39% price drop in two years, starting in 2006/2007 in order to ensure persistent market balance.

2. Compensations to farmers to be 60 % from price decrease. That support should be included in common payments to farms and payment obligations with considering the standards of environment and land management.
3. Time of new regime, including extension of sugar quota system, is stated until year 2014/2015. Recurrent consideration is not planned.
4. "A" and "B" quota are consolidated in one production quota.
5. Intervention system abolition and substitution of intervention price with base price.
6. Implementation of private storage system to create protective net in case if market prices will drop lower than base price.
7. Voluntary four years long EU sugar-refineries and also izo-glucose and insulin syrup producers' closing of production unit restructuring scheme, which includes decreasing payments in order to motivate closing and refusal of quota, in order to solve successfully social consequences and impact to environment made by restructuring.
8. This payment is EUR 730 per ton in the first year, which will decrease to EUR 625 in the second year, to EUR 520 in the third year and to EUR 420 in final year.
9. Addition payments will be available in the first year to the sugar beets farmers, who have impact of the closure of sugar refineries in the first year, when they had delivery rights.
10. Both these payments will be financed by determining gradual decrease in payment to quota keepers and it will last for three years.
11. There is right to receive previous reserved payments for sugar beets if they are cultivated as non-food crop and in regard to that they will be eligible for support of provided for energy producing crop in the amount of EUR 45 per ha.
12. To maintain certain production in current "C" sugar production countries, in addition will be planned one million tons for a single-payment, which match up with restructuring support amount per one ton in the first year.
13. Sugar for chemistry and pharmacy industry needs and production of bio-ethanol will be excluded from production quota (Europe-Rapid-Press Releases, 2005).

As the result of reforms was planned to decrease total sugar quota by 6 million tons or 32.2% of basic and extra granted quota. To endow implementation Temporary Sugar Industry Restructuring Fund was created (Council Regulation Nr. 320/2006, 2006), which started to work in July 1st, 2006.

In Latvia, it is possible to divide in two periods the action of sugar industry involved parties to implement a sugar reform:

1. **March 2006**, when first serious discussion was started – to continue production or not. Initially "Jelgavas cukurfabrika" Ltd had informed about its decision to close sugar-refinery. Then, Cabinet of Ministers provided possibility of dividing existing quota between sugar–refineries (MK, 2006), to contribute continuance of the industry. Then it was made certain, that "Jelgavas cukurfabrika" Ltd was satisfied with the issue that Ltd "Liepājas cukurfabrika" was continuing producing sugar, however then they changed their opinion and both sugar-refineries continued to work, in that way sugar-beets planters could sow, cultivate sugar beets and sell its production to sugar-refineries according with concluded delivery contracts.
2. **December 2006**, which started with the hope to maintain sugar industry in Latvia, since at beginning of December government accepted draft plan for the law from Ministry of Agriculture "Amendments of Sugar Industry Law", in that way the sugar industry would be rearranged accordingly with requirements of EU new sugar common market organization (Leta, 2006). However, a couple weeks later research made by LSIAE was published. It declared that sugar industry in Latvia could not exist in long-term. They concluded that beginning with year 2010 balance in sugar industry would be with negative sign, based on the price of sugar beets and size of compensations, which are planned to sugar beets farmers, sugar sales price, and cost of labor, increasing energy prices and other processes going on in the market. In research calculations, based on data of year 2005 and prognoses in sugar processing and sugar beets cultivation, were made based just on one aspect – when it is the most profitable time to receive EU compensations for restructuring. However, there was not even a detailed and complete study carried out on the prospective evaluation of consequences of sugar and connected industries mutual interaction and other aspects of national economy and socioeconomic aspects of liquidation of sugar industry such as:

1. Losses in cattle breeding, especially in dairy industry ~ 2 millions LVL, due to prognoses of rise in the price of feed, producing extra ensilage, which costs is higher per 1 ton than cheap sugar beet cuttings. It is possible to forecast that there will be necessary to produce an extra ~ 140 thousands of ensilage.
2. It means that instead of ~ 500 ha of former sugar beets area will have to be reorganized as feed area and will require at least 1.7 millions LVL in peripheral agro-technical and technological expenses.
3. Residual sugar beets area may be replaced with cereals and rape, so ~ 7900 ha will need extra investments, especially techniques and equipment for harvesting, storage and first stage processing, which is approximately 2 –3 millions LVL. However, cultivation of sugar beets gave grater mass of profit from each ha comparing with grass and rape area, it is also necessary to calculate total decrease in incomes for the farms. Using data of The Latvian Rural Advisory and Training Centre (LLKC) about gross covering in farms, it is possible to calculate decrease of 421.69 Ls/ha or for whole area – the decrease will be 3.3 millions LVL if intensively cultivating winter wheat or decrease of 463.88 Ls/ha or 3.7 millions LVL if cultivating spring rape (LLKC, 2006).
4. Will decrease state direct payments to farmers for field crops and feed crop, because will increase excess of references area due to cultivation of feed crop, grass and rape in former sugar beets areas.
5. There of sugar support is provisioned to be included in the Single Farm payment (new Member States Single Farm payment system has been adapted until January 1st, 2011 (Ministry of Agriculture, 2007), sugar beets farmers will be losers, due to the fact that payments will be paid to all cultivators of farmland not in particular the owners of sugar beets areas.
6. Sugar beets cultivating farms will face the decrease in exploitation time of agricultural equipment by at least 2 months and will decrease time of sugar beets harvesting and transportation.
7. It will decrease time of employment of labor force during year – it means that starting from October Managers of rural farms will have to think how to employ and retain employees until next season; especially it is crucial in farms with specialty in crop farming.
8. It will worsen negative trade balance with agricultural and food products, because sugar will have to be imported, but size of the sugar market is at least 30 millions LVL, if calculating decelerated intervention price EUR 631.9 per sugar ton (European Parliament, 2006).
9. Situation in world market is rapidly changing. Still in the spring in the World Stock Exchange ton of sugar cost just a bit over 200 dollars. With the EU sugar reform and restructuring of Latin-America countries - moving from sugar to production of ethanol - price increased threefold. Therefore, at the end of summer sugar price per ton in Stock Exchange exceeded 600 dollars. Thus, it is not expected that Latvian consumers will be able to buy cheaper sugar (Tomson I., 2006). It has to be included in calculations that import sugar price will include also extra transportation expenses.
10. It is possible to forecast rise of sugar prices in domestic market firstly on count of increasing demand when sugar-refineries will declare the closing and secondly knowing that in old EU Member States sugar prices exceeds sugar price in Latvia.
11. Sugar-refineries have made certain investments in adjustment of producing. For example, in season 2006 Jelgava sugar-refinery in pre - purification plant invested 1 million LVL (Tomsone I., 2006). Sugar producing after dismantling will be not possible.
12. There has not been made assessment of bio-ethanol producing potential from sugar beets in Latvia. One sugar beet hectare gives 8.6 times more bio-ethanol than one hectare of wheat, 12.6 times more then one-hectare rye (Kalniņš A., 2006). Latvia has not developed the conditions and therefore can not apply for payment applicable to sugar beets, if they are cultivated as non-food crop, and also are ineligible to apply for support of EUR 45 per ha for crop meant for energy producing. (Europe-Rapid-Press Releases, 2006)
13. There are possibilities of change of qualification for some people in the labour force, which is one of the problems for employees in sugar-refineries. Closing of sugar-refineries means the work loss of more than 600 employees (Skujiņa L., 2006), and it will affect ~ 390 sugar beets cultivation farms (Leta, 2006).
14. There have not been performed calculations if potential compensations of restructuring will cover expenses, which will be necessary for dismantling of sugar-refineries, improvement of professional skills for employees and farm reorientation to others types of production.
15. By production liquidation, national budget will not receive accordingly tax payments, and also will decrease budget of involved cities - Jelgava and Liepāja and thus, possibly may increase social tension there.

16. Impact of other operation of sugar-refineries have not been accounted for, for instance, "Jelgavas cukurfabrika" Ltd provides heating to a part of Jelgava population.
17. Household traditions of preparing home - made jam and canned food in Latvia.
18. Local sugar demand from apiculture industry.
19. Psychological problems may arise due to liquidation of agriculture sub-sector that has existed in Latvia for over 80 years and before accession to EU it was one of the most proper industries. The possibility of threats exists that the similar situation may face other sectors of the industry.

Conclusions

In order to prepare plan of sugar-refineries restructuring is necessary:

1. To calculate the congruence of researches and its results made by LSIAE for every sugar-refinery and sugar beets farmer in regard of economical and financial situation impact and what are possibilities to achieve more effective existent production – in both sugar processing and sugar beets cultivation.
2. To assess the impact of common – direct and indirect - socioeconomic and physiological factors and consequences of liquidation of sugar industry in Latvia.
3. To consider possibility to merge with the Lithuanians by transferring sugar quota that was meant for Latvia to continue sugar beets cultivation.
4. To consider possibility to keep at least one sugar-refinery in Latvia, in this way partly continue sugar beets cultivation.
5. Evaluate possibilities for (one or both) sugar-refineries to undertake the possibly in the short time the production of bio-ethanol using sugar beets, therefore retaining and even enlarging sugar beets cultivation in future.

After precise and careful evaluation of all bounded aspects of industry and sectors, it will be possible to take the most appropriate and proper decision.

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MAIZES TIRGUS VĒRTĒJUMS RAŽOTĀJU SKATĪJUMĀ

BREAD MARKET ASSESSMENT IN PRODUCERS' VIEW

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Abstract

Big changes are taking place in the bread market of Latvia now. Several enterprises have stopped bread production, but some enterprises have specialised in producing confectionery goods or oriented towards producing new products. In order to ascertain producers' opinion on bread market development perspectives, a survey was conducted in which representatives of 51 bread producing enterprises, accounting for 73% of all bread producing enterprises in Latvia, were interviewed. During the study, enterprises were classified by their output and number of employees, as well as bread production and bread sales problems were identified, the situation with opportunities for renewing and modernising equipment at enterprises was ascertained, and producers' opinions regarding factors promoting and hindering industry's development were compiled. Ten largest bakeries control 70% of the bread market by sales volume, but there are about 30 bakeries in Latvia which control only 4% of the market. Bread producers most often use their own limited financial resources for purchasing new equipment; therefore equipment at enterprises is obsolete. According to an opinion of specialists, a lack of qualified labour force is one of the main factors hindering development of enterprises.

Key words: bread, market, production, bakery

Ievads

Maizes ražošana ir viena no nozīmīgākajām pārtikas produktu ražošanas nozarēm. Maize ir svarīga iedzīvotāju uztura sastāvdaļa un to lieto ikviens iedzīvotājs. Pēdējo gadu laikā maizes tirgū vērojamas konkrētas izmaiņas, ko nosaka ļoti asa konkurence ražotāju vidū, energoresursu cenu palielinājums, lielražotāju un lielveikalu ietekmes pieaugums un arī patērētāju vēlmju, prasību un uzvedības modeļu maiņa attiecībā uz maizes patēriņu. Samazinās ne tikai kopējais maizes patēriņš, bet arī maizes ceptuvju skaits (Švītiņš A., 2006.). Jau vēsturiski maize mūsu zemē ir nozīmīgākais un lētākais uztura produkts, bet pašreizējā tirgus piesātinātība kavē uzņēmumu attīstību. Zemā maizes un konditorejas izstrādājumu cena tirgū neļauj nopelnīt līdzekļus, kas nepieciešami investīcijām uzņēmuma attīstībā. Maizes ražotājiem nākas sekot mūsdienu tirgus pārmaiņām, jaunajām komunikācijas metodēm un mainīgajām patērētāju prasībām (Kotlers F., 2006., Praude V., 2005.).

Darba mērķis: noskaidrot maizes ražotāju viedokli par nozares attīstības iespējām.

Darba uzdevumi:

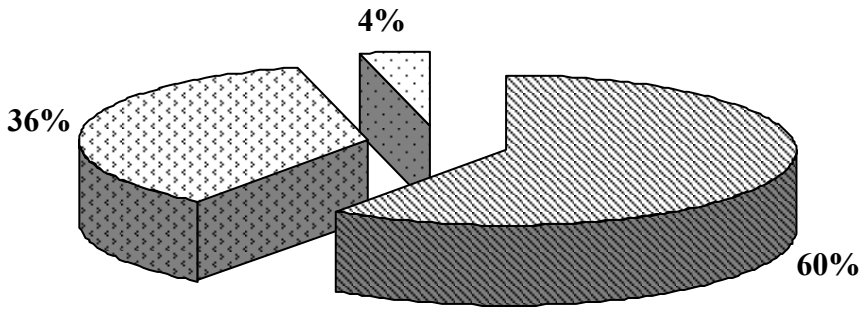
- klasificēt maiznīcas pēc dažādiem raksturlielumiem,
- apzināt maizes realizācijas aktuālās problēmas,
- noskaidrot situāciju par jaunu iekārtu un tehnoloģiju iegādes iespējām maiznīcās,
- noskaidrot ražotāju viedokli par faktoriem, kas veicina vai kavē nozares attīstību.

Materiāli un metodes

Par sākotnējās informācijas avotiem, veicot analīzi maizes tirgū, tika izmantoti: Latvijas Maiznieku biedrības dati; SIA *Lursoft* dati par maizes ražošanas uzņēmumu finanšu pārskatiem; atsevišķu ražotāju, ekspertu aptauju un anketēšanas dati. Darbā izmantotas analīzes un sintēzes, kā arī socioloģisko pētījumu (ražotāju anketēšana, ekspertu aptauja) un matemātiskās statistikas metodes aptaujas rezultātu apstrādei.

Rezultāti

Pēc Latvijas Maiznieku biedrības datiem 2006. gada sākumā Latvijā bija 82 maizes ceptuves, bet gada beigās vairs tikai aptuveni 75 uzņēmumi, kas vidēji diennaktī saražoja apmēram 400 tonnas maizes. Ceptuvju skaita samazināšanās saistīta ar to, ka vairāki uzņēmumi ir pārtraukuši savu darbību vai specializējušies citu izstrādājumu ražošanā (piemēram, Ž. Lagzdiņa maizes fabrika, SIA Zelta Dona, SIA Daugulis un Partneri, SIA Lode). Savukārt daudzos uzņēmumos lielākais ražošanas īpatsvars ir konditorejas vai citu izstrādājumu ražošana, piemēram, SIA Dzeltenais kliņģeris, AS Vidzemes maiznīca, SIA Maiznīca Flora, SIA Kviteks.



lielie uzņēmumi – virs 10 t/diennaktī, vidējie uzņēmumi – 1 – 10 t/diennaktī, mazie uzņēmumi – līdz 1 t/diennaktī
large enterprises – above 10 tons/day; medium size enterprises – 1-10 tons/day; small – to 1 tons/day

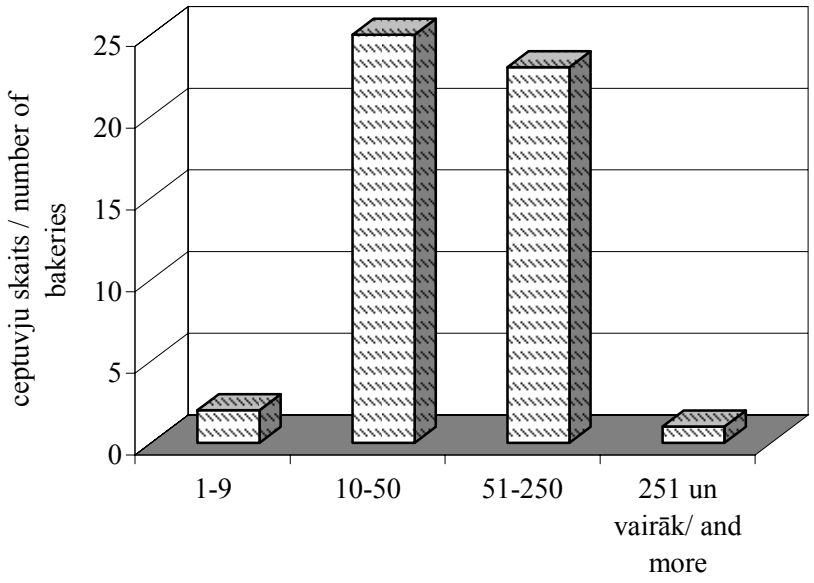
1. attēls. **Maizes tirgus sadalījums**
Figure1. Bread market distribution

Latvijas maizes ražošanas uzņēmumi ir ar dažādu ražošanas jaudu. Nosacīti vidējs maizes ražošanas uzņēmums ir ar jaudu 1 – 10 tonnas maizes diennaktī. Tikai astoņos uzņēmumos ražo 10 un vairāk tonnas diennaktī, aizņemot 60% no kopējā maizes tirgus. Pēc pētījuma aprēķiniem ir 36 ceptuves, kur dienā cep no 1 tonnas līdz 10 tonnām maizes un tajās saražo 36% no dienas kopējā maizes daudzuma. Savukārt 31 uzņēmums cep mazāk kā 1 tonnu diennaktī, kas ir tikai 4% no dienā saražotā apjoma (sk. 1. att.). Vairāk kā 10 t/diennaktī cep: AS Hanzas maiznīcas, SIA Fazer maiznīca, AS Maiznīca Dinella, AS JLM Grupa, SIA Vecā Maiznīca, SIA Dona, SIA Lielezers. Latvijas maizniekiem arvien vairāk jārēķinās ar AS RIMI Baltic Gruop lielveikalos atvērtajām ceptuvēm, kur dienā saražo vairāk kā 10 tonnas dažāda veida, galvenokārt, kviešu maizes izstrādājumus.

Pētījuma ietvaros tika izstrādāta anketa maizes ražošanas speciālistiem. Tajā ietverti gan atklātie, gan slēgtie jautājumi par maiznīcas saimniecisko un finanšu darbību un nozares attīstību. Pētījumā laikā aptaujāts 51 uzņēmums, kas ir 73% no visiem maizes ražošanas uzņēmumiem Latvijā 2006. gadā.

44 no visām aptaujātajām maizes ceptuvēm Latvijā darbojas vairāk kā 10 gadus. Tās galvenokārt savu darbību sākušas XX gadsimta deviņdesmito gadu sākumā. Taču ir arī tādas ceptuves, kas patērētājiem maizi piedāvā jau 40 un vairāk gadus, piemēram, AS Vidzemes maiznīca, SIA Valmieras maiznieks, SIA

Gulbenes maiznieks u.c. Tās galvenokārt ir ceptuves, kas savu darbību uzsākušas padomju laikā, bet laika gaitā mainījušas nosaukumus un saimniekus, saglabājot pamatdarbību – maizes cepšanu.



2. attēls. **Darbinieku skaits maizes ceptuvēs**
Figure 2. Number of employees in bakeries

Pēc veiktā pētījuma var secināt, ka Latvijā ir tikai viena ceptuve – AS Hanzas Maiznīcas, kas nodarbina vairāk kā 251 darbinieku. Latvijā maizes ražošanas uzņēmumos galvenokārt ir 10 – 50 un 51 – 250 darbinieku, kas attiecīgi ir 49% un 45% no aptaujātajiem uzņēmumiem (sk. 2. att.).

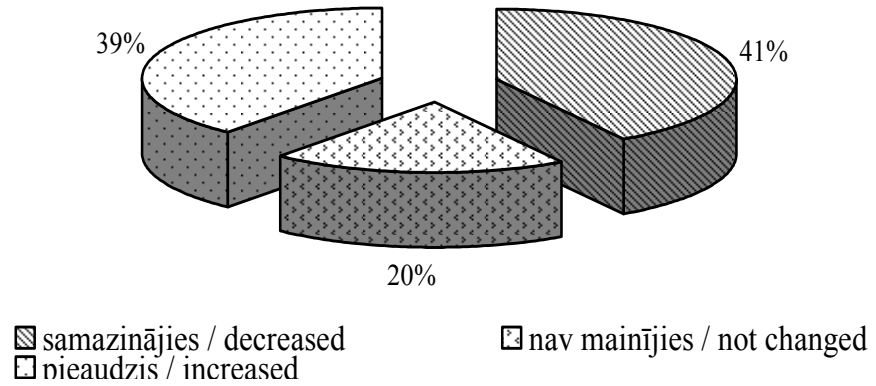
Pēdējo trīs gadu laikā 35% maizes ceptuvju darbinieku skaits ir samazinājies, kas saistīts ar ražošanas apjoma samazināšanos, 40% – darbinieku skaits nav mainījies, bet 25% no aptaujātajiem uzņēmumiem to skaits ir palielinājies. Uzņēmēji darbinieku skaita pieaugumu visbiežāk skaidro ar ražošanas apjoma palielināšanos un veiktajiem mārketinga pasākumiem.

Lielveikali ir plaša sortimenta pārtikas mazumtirdzniecības zona. To raksturo ne tikai plašs sortiments, bet arī saasināta konkurence starp ražotājiem un to izstrādājumiem. Maizes ražotāji savu produkciju galvenokārt realizē dažādu lielveikalu tīklos, kā, piemēram, Rimi Grupa, VP Markets, Elvi, Nelda, Beta un citos, kā arī savos un mazumtirdzniecības veikalos. 8% no visiem aptaujātajiem uzņēmumiem maizi realizē tikai savos veikalos, taču vērojama tendence samazināt savu tirdzniecības vietu skaitu. 4% gadījumu maizi realizē tikai mazumtirdzniecības veikalos, jo tās ražotāji nespēj izpildīt lielveikalu izvirzītās augstās prasības.

Pēdējos gados lielveikalos atvērtās maizes ceptuves pircējus pievilina ar svaigi ceptu izstrādājumu smaržu. No aptaujātajiem ražotājiem 53% gadījumu lielveikalos ierīkotās maizes ceptuves ar savu darbību būtiski ietekmē maizes pārdošanas apjomu. Šī problēma ir aktuāla tiem ražotājiem, kuri savus izstrādājumus realizē lielveikalos ar svaigās maizes ceptuvēm un pārdod kviešu maizes izstrādājumus. Rudzu maizes ražotājiem šī problēma nav aktuāla. Lielveikalu ceptuves darbība neietekmē arī tos ražotājus, kuri savu maizi nerealizē lielveikalos vai neatrodas to tuvumā.

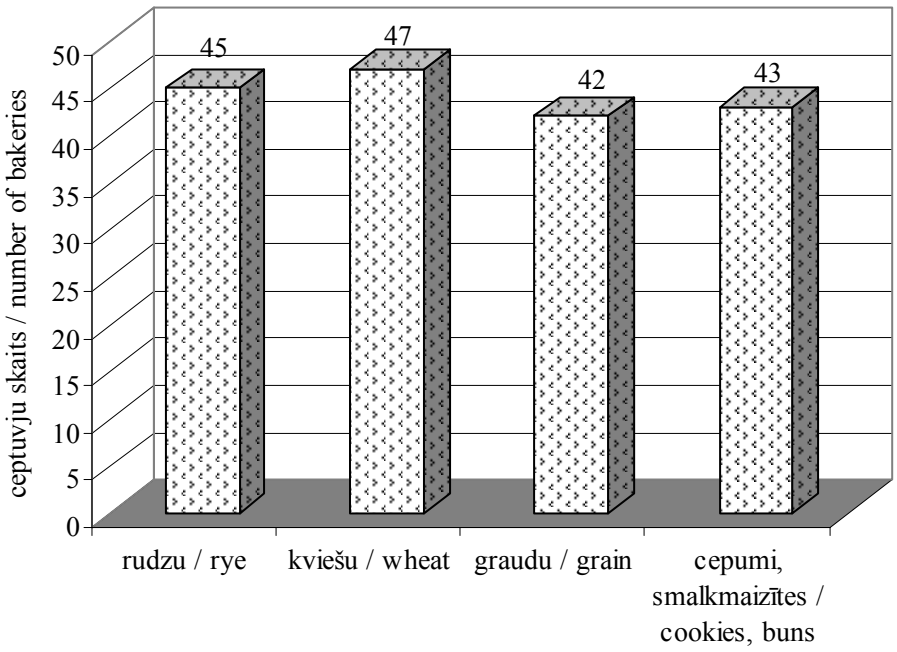
Analizējot maizes ražošanas apjomu izmaiņas (sk. 3. att.), tika secināts, ka trīs gadu laikā 20% aptaujāto maiznīcu ražošanas apjoms nav mainījies. Maizes ceptuves ar sliktu finansiālo situāciju ir samazinājušas savu ražošanas apjomu, bet finansiāli stabilāki uzņēmumi ir pārņēmuši šo tirgus daļu.

Pēc maizes ražotāju domām, viņu saražotās produkcijas pārdošanas apjomu visvairāk ietekmē konkurentu cenu politika (31%), nozīme ir arī produkcijas atpazīstamībai, zīmolam (27%). Zīmola atpazīstamību galvenokārt uzsvēra to uzņēmumu pārstāvji, kuri patērētājiem piedāvā plašu maizes sortimentu, bet tas nelikās nozīmīgs, piemēram, rudzu maizes ražotājiem vai uzņēmumos ar atšķirīgu produkciju. Konkurentu degustāciju rīkošana veikalos tika novērtētas kā mazsvarīga, bet tika atzīts, ka jebkurai reklāmai ir sava nozīme un ietekme, bet par to būtu jāveic konkrēti pētījumi.



3. attēls. **Maizes ražošanas apjoma izmaiņas**
Figure 3. Changes in bread production volume

Ļoti aktuāls maizes ražotājiem ir kvalificēta darbaspēka trūkums. Visi aptaujātie (100%) uzņēmumu pārstāvji kvalificēta darbaspēka trūkumu ir minējuši kā ļoti svarīgu vai svarīgu faktoru ceptuves tālākai attīstībai. Tāpat uzņēmuma attīstību kavē arvien pieaugošās izejvielu izmaksas un to kvalitātes svārstības, kā arī citu izmaksu palielinājums. Savukārt mazāka vai pat nenozīmīga ietekme, kas kavē uzņēmuma attīstību, tika minēta kontroles institūciju darbība un izmaiņas likumos, citos normatīvajos aktos.

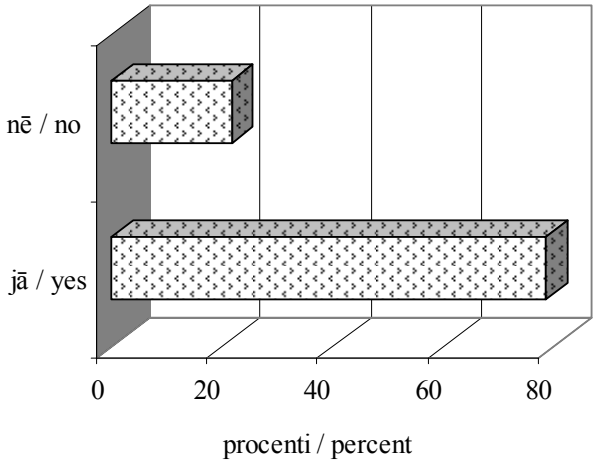


4. attēls. **Apsekoto uzņēmumu ceptās maizes veidi**
Figure 4. Bread types produced in the questioned enterprises

4. attēlā var redzēt, ka lielākā daļa maiznīcas nespecializējas viena maizes veida ražošanā, bet piedāvā patērētājiem dažādus izstrādājumus – gan rudzu, kviešu un graudu maizi, gan smalkmaizītes un cepumus. Tāpat maizes ceptuves patērētājiem piedāvā dažādus citus izstrādājumus – picas, barankas, prjaņikus, kēksus, kūkas, pīrāgus, sausiņus, sklandu raušus, piparkūkas u.tjpr.

No visiem aptaujātajiem uzņēmumiem 23% maizes ražotāji eksportē maizi vai vismaz mēģina to darīt mazākos vai lielākos apjomos. Valstis, uz kurām Latvijas maiznieki eksportē maizi, ir Vācija, Anglija, Zviedrija, Somija, Islande, Lietuva, Igaunija, Polija, ASV, Īrija un Izraēla. Populārākas valstis ir Lietuva, Igaunija un ASV. Maizi eksportē ne tikai lielās maizes ceptuves, kā, piemēram, AS Hanzas Maiznīcas un SIA Fazer

maiznīca, bet arī vidēji lieli uzņēmumi (piemēram, SIA Lāči, PB Priekules maizes ceptuve, SIA Grinhofs u.c.), pat dažas mazās maizes ceptuves, kas dienā izcep apmēram 1 tonnu maizes. Tomēr jāuzsver, ka mazo un vidējo uzņēmumu maizes eksporta apjomi ir nelieli un neregulāri.



5. attēls. **Iekārtu iegāde pēdējo trīs gadu laikā**
Figure 5. Equipment supplies during last three years

78 % no aptaujātajiem uzņēmumiem pēdējos trīs gados ir iegādājušies jaunas iekārtas, kas liecina par to, ka maizes cepēji domā par attīstību un ražošanas procesu uzlabošanu (sk. 5. att.). Ceptuves ir iegādājušās gan jaunus mīcītājus, krāsnis, mīklas dalītājus, kā arī maizes griezējus un iepakošanas iekārtas, tāpat vairākās ceptuvēs ir samontēta iekārta miltu beztaras uzglabāšanai. 11 no 51 apsekotā maizes ražošanas uzņēmuma jaunas iekārtas nav iegādājušies, šādu rīcību pamatojot ar līdzekļu trūkumu un to, ka ceptuvju peļņa ir niecīga, lai varētu ieguldīt līdzekļus jaunu iekārtu iegādei. Uzņēmumos iekārtas galvenokārt ir iegādātas par saviem līdzekļiem (53%). Jaunu iekārtu iegāde ir bijusi iespējama arī ar sadarbības partneru (6%) un ES fondu (12%) atbalstu.

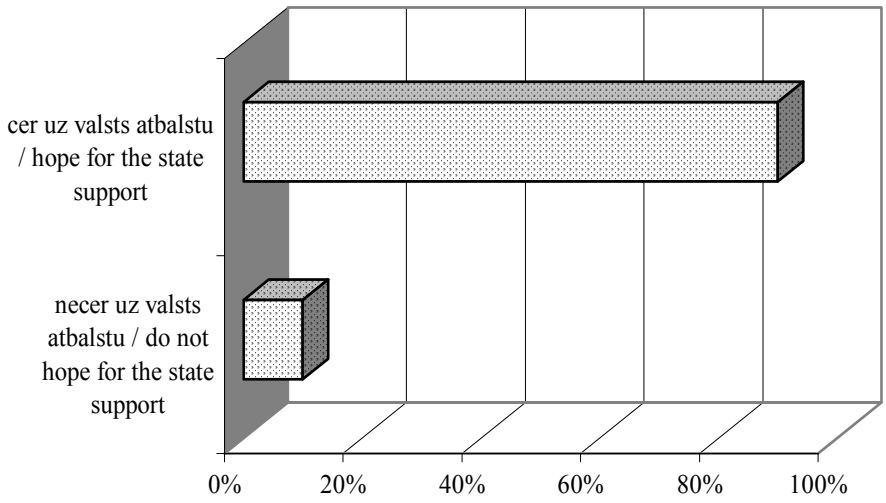
Tā kā maizes ražošana ir ar zemu rentabilitāti, tad 63% no aptaujātajām maizes ceptuvēm ir kāda blakus nodarbošanās un tikai 37% – maizes cepšana ir galvenais un vienīgais darbības veids. Visbiežāk kā blakus nodarbošanos uzņēmēji attīsta sabiedrisko ēdināšanu, piemēram, kafejnīcas, restorānus, lauksaimniecību, piemēram, graudu audzēšana un pārstrāde. Apmēram 9% no aptaujātajiem blakus nodarbošanās ir dažāda veida tirdzniecība.

Jautājumā par maizes tirgus attīstību speciālisti atzina, ka tieši konkurence ir nozīmīgs faktors, kas liek veidot jaunas maizes šķirnes, specializēties konkrētu maizes izstrādājumu ražošanā, domāt par reklāmu un mārketinga pasākumiem. Pozitīvi tika novērtēta jebkura veida maizes un tās produktu reklāma, informatīvo un izglītojošo materiālu sagatavošana patērētājiem par maizes sastāvu un nozīmi uzturā.

Pēc speciālistu domām, vieni no svarīgākajiem faktoriem, kas kavē viņu uzņēmumu attīstību, ir šādi:

- zemā maizes cena, kas bieži vien ir tuva tās pašizmaksai,
- lielveikalu uzspiestās, nevienlīdzīgās prasības,
- kvalificēta darbaspēka trūkums,
- sadrumstalotais maizes tirgus,
- iedzīvotāju skaita samazināšanās,
- Latvijas iedzīvotāju zemā pirktspēja,
- ēšanas tradīciju izmaiņas.

Vairāki uzņēmumu vadītāji uzskata, ka maizes ražošanas uzņēmumi nesaņem pietiekamu atbalstu no valsts, kas varētu būt nodokļu atvieglojumu veidā vai kā atbalsts no pašvaldībām konkursos par maizes piegādēm pašvaldību uzņēmumiem. Uzņēmēji uzsvēra, ka nav iespēju vai tās ir ierobežotas, lai izmantotu ES strukturālo fondu līdzekļus ražošanas attīstībai un modernizēšanai.



6. attēls. **Maizes ražotāju domas par valsts atbalstu**
Figure 6. Bread producers' opinion regarding the state support

Kā redzams 6. attēlā, tad tikai 10% no aptaujātajiem necer uz valsts atbalstu ražotājam, savukārt 90% uzņēmēju ir pamatots viedoklis, kāds tas varētu būt:

- nodokļu atvieglojumi vai saudzīgāka nodokļu politika,
- atvieglojumi infrastruktūras attīstībai,
- lielveikalu patvaļas ierobežošana,
- nodrošināšana ar darbaspēku,
- priekšroka tiek dota vietējo ražotāju produkcijai pašvaldības iestādēs.

Pētījuma gaitā tika izvirzītas vairākas hipotēzes un, izmantojot SPSS programmu paketi (Arhipova, 2003.), apstiprinājās, ka pastāv ciešas sakarības:

1. Maizes uzņēmumu peļņa ir atkarīga no tā, vai uzņēmumam ir papildu nodarbošanās

Ar 80% varbūtību var apgalvot, ka pastāv vidēji cieša sakarība ($p = 0.19$) starp uzņēmumu peļņu un papildu nodarbošanos.

No tā jāsecina, ka maizes ceptuves var gūtu lielāku peļņu, ja tām papildus vēl ir kaut kāds darbības veids.

2. Ražošanas apjoma izmaiņas ietekmē darbinieku skaita izmaiņas uzņēmumā

Ar 99,9 % varbūtību var apgalvot, ka pazīmes ir atkarīgas ($p = 0.00$). No tā var apgalvot, ka, samazinoties ražošanas apjomam, mainās arī darbinieku skaits, kas ir raksturīgi maizes uzņēmumiem, jo tajos ir relatīvi daudz roku darba.

3. Samazinoties ražošanas apjomam pasliktinās arī uzņēmuma finansiālā situācija

Ar 96% varbūtību var apgalvot, ka pastāv vidēji cieša sakarība ($p = 0.04$) starp ražošanas apjomu un uzņēmuma finansiālo situāciju. Samazinoties neto apgrozījumam, samazinās arī peļņa, kas reizēm uzņēmumam rada tikai zaudējumus.

4. Tirgojot maizi savos veikalos, uzņēmums ir labākā finansiālā situācijā

Ar 95% varbūtību var apgalvot, ka pastāv vidēji cieša sakarība ($p = 0.05$) starp uzņēmuma finansiālo stāvokli un maizes tirdzniecību sava uzņēmuma veikalos.

Tas nozīmē, ka, tirgojot savā veikalā, uzņēmējs var piedāvāt maizi par lielāku cenu, bet, to piedāvājot lielveikalos, pārdošanas apjomi var būt lielāki, bet jāievēro lielveikalu izvirzītās prasības.

Tas var izpausties kā soda naudas maksāšana, ja netiek izpildīts kāds no līguma punktiem vai tiek piedāvātā zema iepirkuma cena.

Secinājumi
Conclucions

1. Latvijā 2007. gada sākumā darbojas aptuveni 75 maiznīcas, kas lielākoties orientējas uz vienu un to pašu mērķtirgu un piedāvā līdzīgu produkciju, kā rezultātā maizes ražotāji galvenokārt savstarpēji konkurē nevis ar maizes kvalitāti, bet gan ar cenu.
2. Saskaņā ar Eiropas Komisijas mazo un vidējo uzņēmumu (MVU) kategoriju iedalījuma pēc darbinieku skaita 94 % maizes ceptuves pieder pie mazo un vidējo uzņēmumu kategorijas, bet 4% ir mikrouzņēmumi. Lielais uzņēmums ir tikai viens.
3. Pēc ekspertu viedokļa, kvalificēta darbaspēka trūkums ir viens no galvenajiem kavējošiem faktoriem maizes uzņēmumu attīstībā.
4. Maiznīcu skaits pēdējo trīs gadu laikā strauji samazinās. Uzņēmumi, kuru pamatdarbība bija maizes cepšana, mēģina pārprofilēties uz citu darbības veidu: miltu konditorejas izstrādājumu ražošanu, tirdzniecību un lauksaimniecību un tamlīdzīgi, jo maizes ražošanai ir zema rentabilitāte.
5. Desmit lielākās maiznīcas kopā pēc pārdošanas apjoma aptver 71% no maizes tirgus. Latvijā ir vairāk kā 30 maizes ražošanas mikrouzņēmumi, kas aizņem tikai 4% no kopējā maizes tirgus.
6. Maizes ceptuves galvenokārt izmanto kredītus un līzinga pakalpojumus, un jaunu iekārtu iegādei izmanto pašu uzņēmumu ierobežotos līdzekļus.

Priekšlikumi
Proposals

1. Maizes ražotājiem un Latvijas Maiznieku biedrībai sadarbojoties ar profesionālās izglītības iestādēm, jāveic pasākumi, lai stimulētu jauniešus apgūt maiznieka profesiju, jo visi aptaujātie eksperti ir uzsvēruši kvalificēta darbaspēka trūkumu kā ļoti svarīgu vai svarīgu faktoru ražotnes turpmākai attīstībai.
2. Aptaujas materiāli liecina, ka 87% no visām maizes ceptuvēm Latvijā darbojas vairāk kā 10 gadus, tāpēc tām ir steidzami jārisina jautājums par jaunu modernāku iekārtu iegādi un tehnoloģiju ieviešanu, lai izdzīvotu asajā konkurences cīņā.
3. Maizes ražotājiem un nozares asociācijām jāmeklē iespēja sagatavot priekšlikumus valsts pārvaldes institūcijām par atbalsta nodokļu politikas īstenošanu un mazo un vidējo uzņēmumu (MVU) darbības motivēšanu.
4. Sekmēt aktīvāku ES struktūrfondu līdzekļu piesaisti maizes ražošanas darbības pilnveidei, kritiski izvērtējot to saņemšanas nosacījumus.
5. Maziem un vidējiem maizes ražotājiem aktīvāk jāizstrādā savam uzņēmuma raksturīgi, īpaši produkti, tādā veidā nodrošinot savu patstāvīgo pircēju loku.
6. Latvijas Maiznieku biedrībai ar dažādiem maizi reklamējošiem un izglītojošiem pasākumiem sabiedrības apziņā jāpaaugstina maizes kā svarīga uzturprodukta vērtība.

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CHANGES OF THE BEER MARKET IN POLAND

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Abstract

The purpose of this article is to present changes of the Polish beer market. First, is shown the level of beer production and consumption, which has increased dramatically in the past 10 years in Poland. The author also made an attempt to assess concentration of beer production level using the following methods: concentration of beer production ratio - Crk and Index of Herfindhal-Hirschman (HHI).

Second, the major trends in beer consumption are presented. Many of Polish beer enterprises were taken over by foreign investors thus the context of the beer market globalisation is presented. The author concentrated also on tax excise system in Poland, which is significant obstacle for producers.

Key words: beer market, beer production and consumption, concentration of beer production, excise tax

Introduction

Brewing industry beer sales in Poland came to a record-breaking 30.3 m hl in 2005 year, marking a 4% increase against 2004, according to figures provided by the Brewing Industry Employers' Association ZPPP. Members of the Association ZPPP control some 95% of the Polish beer market.

Poland is one of the world's fastest-growing beer markets, ranking tenth in the world and fifth in Europe in terms of consumption. As beer consumption falls throughout most of Europe, the continued growth occurring in eastern European countries such as Poland is attracting the attention of western companies. Poland's leading breweries were taken over by international corporations, which invested significant amounts on the brewing plants' modernisation and upgrade (for instance SABMiller, Heineken, Carlsberg).

Beer market in Poland is highly consolidated thus author calculated the concentration of beer production ratio - Crk and Index of Herfindhal-Hirschman (HHI).

The concentration of beer production ratio Crk presents the largest k-producers' share in whole production (sales, employment) in certain producers' population. It also refers to the largest market sellers' share on certain market and then can be called market concentration ratio. Generally, k describes the number of companies and ranges from 1 to 10, frequently k=1,3,4,5,10 (Sosnowska A., 1998).

HHI has the following form: $H = \sum_{i=1}^{n} fi^{2}$, symbol: fi means i-producer's share in the whole population (branch), n – number of enterprises. H volume ranges from 1 to 10. Its growth shows increase of concentration level. H = 1 means monopoly, however values near 0 indicate a big dispersion. HHI can be presented in integer (numbers) *HHI max* = 10 000, and shares on a percentage basis (0-100%) (Sosnowska A., 1998).

Results and discussion

Changes of beer production and consumption in Poland

In 1990 Polish brewery companies brewed 11.4 million hectolitres of beer. In the 1990s production volume grew by 6 to 14% per year. Production almost tripled to 29.2 million hectolitres of beer in 2004 (graph 1). Since the early 1990s beer production has grown by a 130 percent. The industry employs some 15,000 workers (nearly 10,000 are at the three largest companies). The brewing sector turnover for 2002 was 2.1 billion euro.

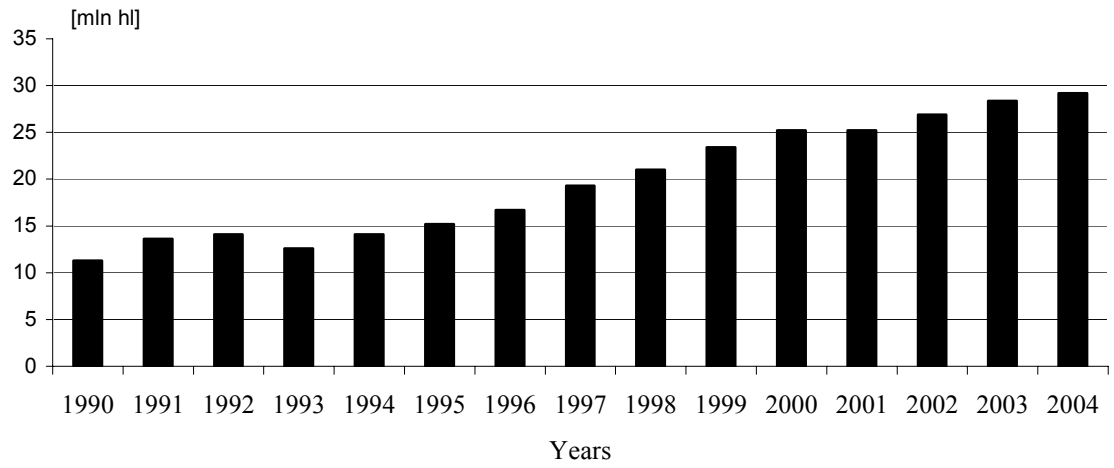

Figure 1. Beer production in Poland in 1990 – 2004 period

Source: Rocznik Statystyczny Przemysłu GUS, Warszawa 2003, s. XXVIII – XXIX, Produkcja wyrobów przemysłowych w 2002 r., GUS, Warszawa, p. 58.

Graph 2 indicates that the highest level of beer production was reached in 1999-2002 period in the following voivodship: śląskie (an increase of 27,9%), wielkopolskie (an increase of 113,7%), mazowieckie, warmińsko-mazurskie, małopolskie, zachodniopomorskie. On the other hand, the lowest level of beer production was noticed in the following voivodship: lubuskie, świętokrzyskie, łódzkie, lubelskie, kujawsko-pomorskie.

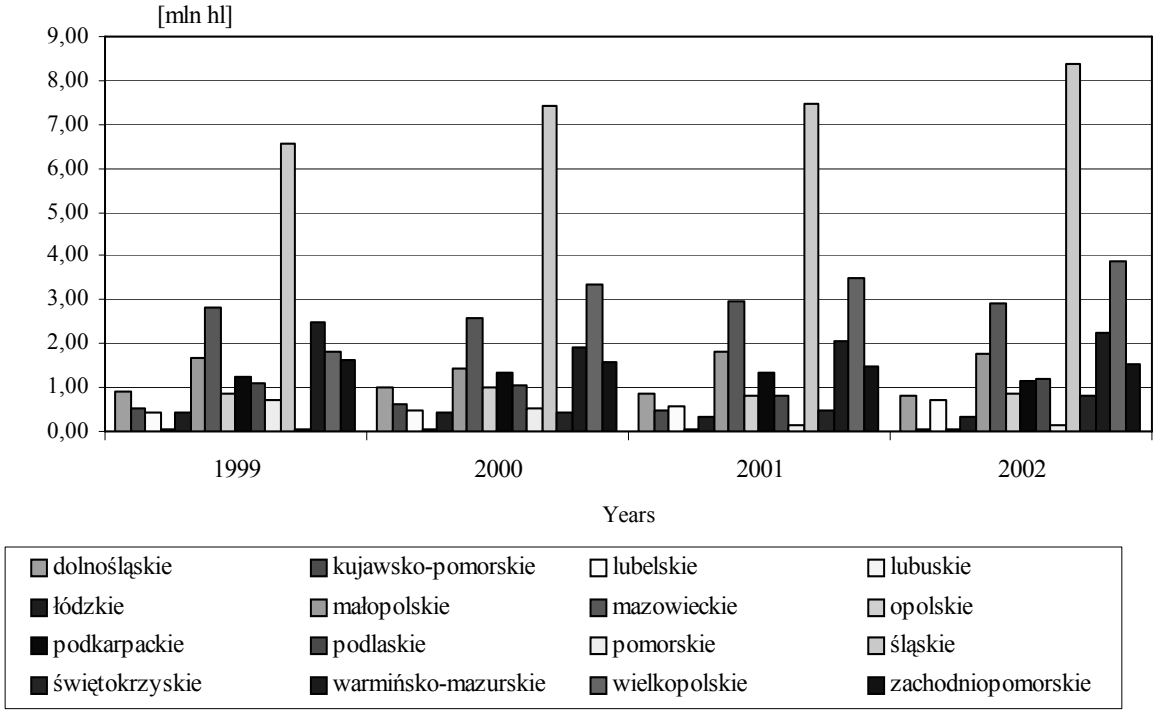

Figure 2. Beer production in Poland in 1999 – 2002 period by voivodship

* contents over 0,5% of alcohol.
Source: Own calculation based on Roczniki Statystyczne Przemysłu 1998 – 2003, GUS, Warszawa..

Beer consumption per capita in Poland amounted to 75 litres in 2004 (table 1). In 2005, according to statistics from the Brewing Industry Employers' Association (ZPPP), the average Pole drank 80 litres of

beer, twice as much as ten years ago, and thus came closer to the EU average. It means that further potential growth is rather limited. In terms of sales value, Poles spent an estimated PLN 14.5bn on beer in 2005, which generated some PLN 6bn worth of tax revenues for the state budget (Beer sales..., 2005). According to Żywiec Group research in 2002, the most popular brands were Żywiec, Tyskie Gronie, Warka Strong, Lech Premium.

Table 1

Beer consumption of The Brewers of Europe's members in 2000-2004 period

Specification	Beer consumption per capita (litres)				
	2000	2001	2002	2003	2004
Austria	108,1	107,0	109,3	110,6	108,6
Belgium	99,0	98,0	96,0	96,0	93,0
Denmark	102,2	98,6	96,7	96,2	90,1
Finland	77,9	80,2	81,0	80,2	84,0
France	36,2	35,9	34,7	35,5	33,4
Germany	125,3	122,4	121,5	117,7	115,8
Greece	40,0	39,0	39,0	39,0	-
Ireland	125,0	125,0	124,8	118,0	108,0
Italy	28,1	28,9	28,2	30,1	29,6
Lithuania	-	-	-	75,5	81,2
Luxemburg	108,2	100,9	98,5	106,6	-
Malta	-	-	-	-	-
Netherlands	82,8	80,5	79,2	78,7	77,9
Poland	**65,3**	**65,1**	**70,3**	**73,0**	**75,0**
Portugal	62,3	61,3	58,6	-	61,7
Spain	72,0	75,7	73,4	78,3	-
Sweden	56,4	55,4	55,9	55,4	51,5
United Kingdom	97,2	99,0	100,6	101,5	100,8
Norway	52,0	51,0	51,6	50,0	-
Switzerland	58,3	57,2	56,6	58,7	57,3
Turkey	-	-	-	11,5	-

Source: Beer Facts 2003, http://stats.brewersofeurope.org/stats_pages/beer_cons_per_capita.asp

What lies behind the growth has been a change in Polish drinking habits. Poles have moved away from drinking vodka and other strong spirits, and adopted the beer drinking culture which predominates in northern Europe. In many ways this has been due to a shift in lifestyles as a young generation of Poles has embraced the social life associated with beer drinking (Day Matthew, 2006). On the one hand, the acceleration in beer consumption in 2001-2004 period can be explained by the hotter summer, which traditionally improves conditions for the industry, as well as by rising purchasing power of the Polish citizens. On the other hand, the brewing industry additionally benefited from rising excise on the strong alcohols. The tax was raised by 3.4%, which decreased the sales of vodka and encouraged consumers (particularly those in the lower-income segment) to buy more beer.

The other factors have also had an influence on Polish beer market development. Beer profited from government health campaigns to promote alternatives to strong alcohol. On the top of that many of breweries are now owned by multi-national firms who have moved into Poland to exploit the dynamic market. They promoted their products through marketing, despite restrictive laws limiting beer advertising in Poland. There have been three main foreign investors: Heineken, SABMiller, Carlsberg on Polish beer market. Capital structure of these companies was as following:

- Grupa Żywiec (20.01.2004):
  - 61,78% - Heineken (the Netherlands),
  - 30,84% - Harbin BV (the Netherlands),
  - 7,38% -the others;
- Kompania Piwowarska

  - 72% - SABMiller (South Africa),
  - 28% - EAC (Poland);
- Carlsberg Okocim
  - 80,38% - Carlsberg Breweries A/S (31.12. 2001) (Denmark),
  - 7,64% - Agency of Industry Development (Poland),
  - 5,77% - The Investment Fund for Eastern and Central Europe (Denmark);

The sales volume is divided among 65 companies; the beer market is highly consolidated. There is a high degree of concentration: 3 companies (Kompania Piwowarska, Żywiec, Carlsberg Polska) hold a combined market share of around 85 percent (see table 2). Although smaller producers often have a strong position in their own local market, this position is not related to their national market share (only approx. 7%). The larger companies are particularly profitable as many smaller brewers face financial problems.

Table 2

The concentration of production ratio Crk and Herfindhal-Hirschman Index (HHI) of the 3 largest beer producers in Poland in 1993 – 2003 period

Specification	Crk ratio and HHI in Years										
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Crk [%]	32,30	34,10	37,00	38,80	40,73	46,32	71,69	74,89	77,20	76,60	84,49
HHI	0,10	0,12	0,14	0,15	0,17	0,21	0,51	0,56	0,60	0,59	0,71

Source: Own research.

Key players on the beer market in Poland

Main breweries are located in the following places in Poland:

- Żywiec Group S.A. , headquarters - Warszawa, mazowieckie voivodship,
  - Browary Żywiec S.A., Żywiec, śląskie voivodship, production capacity: 4,00 m hl,
  - Browary Warka Ltd., Warka, mazowieckie voivodship, production capacity: 2,20 m hl,
  - Zakłady Piwowarskie w Leżajsku S.A., Leżajsk, podkarpackie voivodship, production capacity: 1,30 m hl,
  - Elbrewery Company Ltd., Elbląg, warmińsko-mazurskie voivodship, production capacity: 2,00 m hl,
  - Kujawiak Browary Bydgoskie Ltd., Bydgoszcz, kujawsko-pomorskie voivodship; production capacity: 0,55 m hl,
  - Bracki Browar „Zamkowy" Ltd., Cieszyn, śląskie voivodship, production capacity: 0,10 m hl;
- Kompania Piwowarska S.A., headquarters - Poznań, wielkopolskie voivodship,
  - Lech Browary Wielkopolski S.A., Poznań, wielkopolskie voivodship, production capacity: 5,00 m hl,
  - Tyskie Browary Książęce S.A., Tychy, śląskie voivodship, production capacity: 5,00 m hl,
  - Browar Dojlidy Ltd., Białystok, podlaskie voivodship, production capacity: 1,00 m hl;
- „Carlsberg-Okocim" S.A., headquarters - Warszawa, mazowieckie voivodship,
  - Browar Okocim S.A, Brzesko, małopolskie voivodship, production capacity: 2,00 m hl,
  - Bosman Browar Szczecin S.A., Szczecin, zachodnio-pomorskie voivodship, production capacity: 1,00 m hl,
  - Kasztelan Browar Sierpc S.A., Sierpc, mazowieckie voivodship, production capacity: 0,70 m hl;
- Browar Belgia Ltd. j.v., Kielce, świętokrzyskie voivodship, production capacity: 1,00 m hl.

In 2000-2002 period Żywiec Group was the market leader, the second place was held by Kompania Piwowarska, third - Carlsberg Okocim. In 2003, it turned out that Kompania Piwowarska reached the best results and enjoyed the highest market share. As you can see on the graph 3, the highest growth of Żywiec Group's market share took place in 1999, and for Kompania Piwowarska in 2000. The main reason was

the effect of activity of foreign investors. It is worth stressing that they have taken over the smaller brewers and that has been the way of increasing shares.

Żywiec Group maintains nationwide brands e.g. Heineken, Żywiec, Tatra Pils, Tatra Mocne, Warka Strong i Warka Jasne Pełne and also local brands e.g. Leżajsk, Specjal in their portfolio.

Kompania Piwowarska owns Tyskie, Lech and Dojlidy breweries. Kompania Piwowarska strengthened its market position in 2005. The company achieved over 37% market share. The success is based mainly on three leading brands: Tyskie, Żubr and Lech. The company has been growing dynamically in the past few years. In January 2005, it reached a major milestone in its history by exceeding 10 m of domestic sales during the 12 months period. This means an increase of 100% since 2000 (Beer consumption..., 2006).

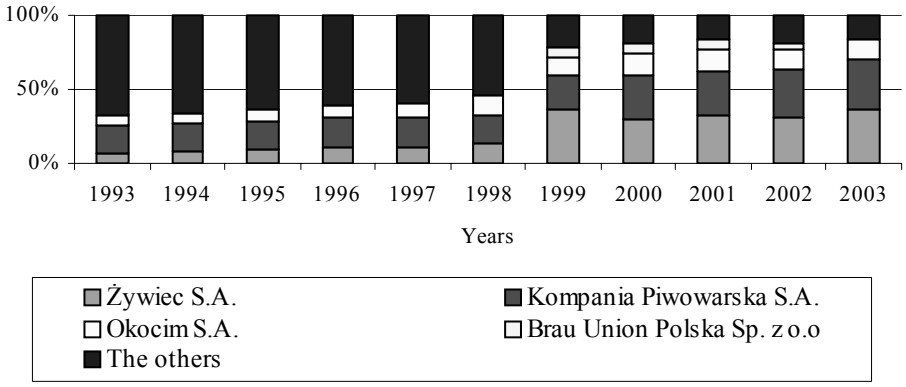

Figure 3. Changes of the main beer producers' shares[1]

Source: Own calculation based on data originated from researched companies.

Fiscal burden imposed on beer in Poland in comparison to EU countries

It is worth comparing the excise tax level imposed on beer and the VAT rates in Poland with those in other EU countries (graph 4 and 5). The bottom line is that high fiscal burden is a significant factor that limited the competitiveness of polish breweries. EU citizens may bring in 110 litres of beer, which is more by one third than the annual consumption per capita in Poland. Considering that the excise tax in Germany and the Czech Republic is about E 9.5 per 100 litres, in Poland this rate is more than double. Moreover, Polish citizens can buy cheap beer in Germany or the Czech Republic and bring it duty free to Poland. This can be dangerous for Polish breweries that are positioned near the border. According to the Association of Polish Regional Breweries the tax excise system is their major obstacle.

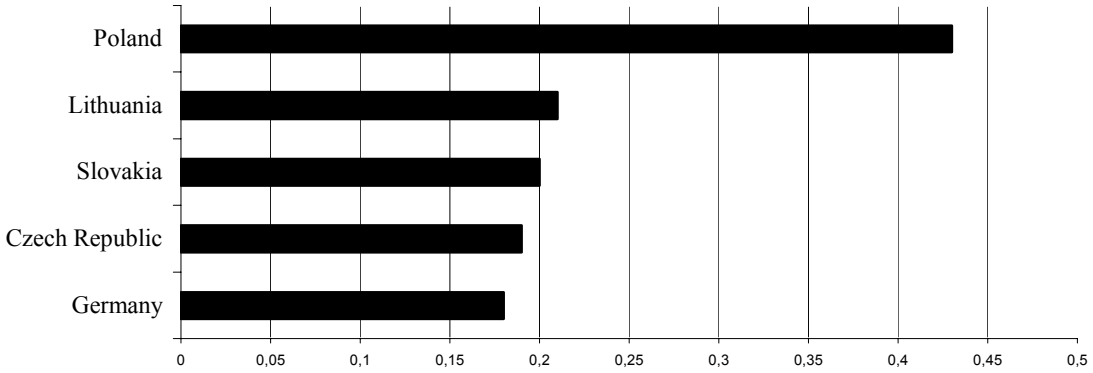

Figure 4. Excise tax imposed on 0.5 litres bottle of beer (in Zloties)

Source: J. Okrzesik, Brewing industry. Business News Poland, No 7, July 2003.

[1] Since 1998 r. figure show Żywiec Group shares, since 1997 Carlsberg Okocim Group shares (due to M&A).

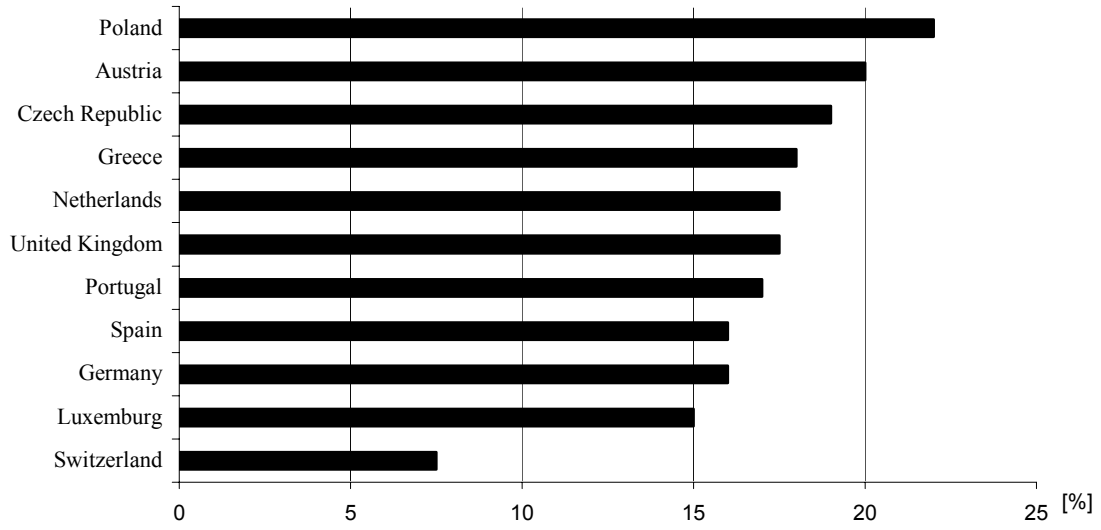

Figure 5. VAT (Value Added Tax) imposed on beer in chosen countries in 2004

Source: Brewing Industry Employers' Association (ZPPP)

Conclusions

First of all, beer production has tripled since 1990. The level of beer production concentration has been very high.

Secondly, there has been a strong competition on the Polish beer market. Foreign brewing companies have invested in Polish breweries and now control a large share of the total beer market.

Thirdly, there have been excise tax differences with neighbouring countries. These might trigger a substantial increase in private import and cross-border purchasing.

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DEVELOPMENT AND PERSPECTIVES OF BREAD PRODUCING ENTERPRISES IN LATVIA

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Abstract

In the paper, a general characterisation of bread producing enterprises was carried out for the period of the recent 5 – 6 years, stressing issues on the number of enterprises, their sizes as well as employment, wages and productivity. The study is based on statistical data, results of a survey of specialists from 73% bread producing enterprises carried out in 2006. The paper reveals key trends in bread production and consumption for the period from 2000 to 2005/2006, identifies price changes and factors impacting prices, ascertains dynamics of expenses on bread for households as well as stresses the problem of the impact of bakeries, established at supermarkets, on bread output. Using the Lursoft Ltd data basis, analysis of key financial indicators was done for 75 bread producing enterprises in the period from 2001 to 2005. The paper ends with conclusions and suggestions for improving enterprise performance under conditions of competition and structural changes in bread consumption. The paper was worked out in the result of accomplishing the LLU Research project No 06.15-xp22.

Key words: bread, enterprises, production, consumption, development

Introduction

The food industry is the second largest processing industry in Latvia. Its share in the GDP of Latvia has stabilised over the recent years at 3.4-3.5% (Latvijas lauksaimniecība un lauki, 2005). The food industry can be considered an integral continuation of the agricultural industry, as its inputs are agricultural products. The food industry sector presently comprises approximately 1/5 of processing industry's value added and employees and 24% of industry's exports. An increase in investments by 31% in this sector in 2005 indicates industry's dynamic development (Ziņojums…, 2006).

Researching this field is topical due to the fact that food industry's products satisfies primary human needs and they are a basis in forming higher, social and cultural needs. Especially it relates to bread production as it is an important food component, and everyone consumes it. Nowadays, the bread market is considered a specific reflector of society's well-being in which there is a niche for bread as a necessity and as an exclusive delicacy.

Bread production and especially bread consumption issues, theoretically justified, widely and in detail have been discussed in studies by scientists (D. Kārkliņa (2004), O. Krastiņš (2001, 2004), V. Pirksts (2004, 2006), V. Rozenberga (2004, 2006), I. Skrupskis (2003), I. Gulbe (2005) a.o. as well as in materials compiled by the Latvian Bakers Association. Several surveys have been carried out in the country (studies by the Marketing Council and the Latvian Facts), which ascertained consumer wishes and requirements in relation to bread quality, assortment, package etc. However, no studies are available that would complexly characterise development possibilities for bread producing enterprises from the viewpoint of bread producers and employers. The following hypothesis is stated regarding the above-mentioned context: competition and changes in food consumption structure are the most important factors affecting development of bread producing enterprises.

The aim of the paper is to identify development perspectives for bread producing enterprises in Latvia.

To achieve the aim, the following tasks are set:

1. to characterise in general bread producing enterprises;
2. to identify bread production and consumption trends;
3. to analyse financial performance indicators of bread producing enterprises;
4. to define perspectives for developing bread producing enterprises.

The following research methods have been used in the paper:

1. General research methods:
   - logically constructive;
   - graphic;
   - monographic;
   - analysis and synthesis;
   - inductive and deductive.
2. Statistical research method.
3. Sociological research method.

Data of the Central statistical Bureau of the Republic of Latvia, the Ministries of Economics and Agriculture, the Latvian Bakers Association, the Internet, periodicals, the Register of Advertisements have been used for the study. Data of LURSOFT Ltd have been used for analysing financial performance of 75 enterprises. Problems and perspectives of bread producing enterprises have been viewed by using results of a survey carried out in 2006 by the authors, in which 51 bread producers (73% of their total number) were polled.

The problems included in the paper were analysed for the period of 2000-2005.

1. General characterisation of bread producing enterprises

The compiled information indicates that the number of bread producing enterprises has decreased more than 2.5 times in the period from 2001 to 2006. In the middle of 2001, there were more than 200 enterprises; in 2004, more than 150 bakeries functioned, in the beginning of 2006 – 83, by the end the year – only 75 bakeries. It implies there is tough competition among these enterprises and the bread market is reinvaded.

An analysis of distribution of bread producing enterprises in Latvian statistical regions in 2006 indicates that most of bakeries are located in Vidzeme, i.e. 20 (or 24% of the total number of bakeries), in Pieriga – 16 (or 19%), in Kurzeme and Riga – 14 in each region (or 17%), in Latgale – 10 (or 12%), in Zemgale – 9 bakeries that account for 11% of their total number.

A special role in providing efficient performance of an enterprise is played by its size. Estimates showed that according to the division of small and medium enterprises by the European Commission, only 4 bread producing enterprises correspond to criteria of a medium enterprise by net turnover, the rest of them are small or even micro enterprises, of which 2/3 are micro enterprises, but a large enterprise is only one.

The largest 8 enterprises producing 10 tons of bread a day or more account for 60% of the whole bread market. 36 bakeries are medium enterprises in which 1 to 10 tons of bread are produced daily and they account for 36% of the bread market. However, 31 bakeries are small enterprises in which less than 1 ton is produced accounting for 4% of the total bread output.

The bakery and confectionery industry is an important employer as 28% of all food industry's employees are engaged in it. During 2000 – 2005, the number of employees engaged in professions of the bakery and confectionery industry increased by 6% and at the end of the period composed 5085 individuals.

Table 1.1

Number of employees in the profession of bakers and confectioners by sex in 2000-2005

Year	Total	Men	Women	Men	Women
		number		percent	
2000	4836	948	3888	20	80
2001	6400	1298	5102	20	80
2002	5060	1049	4011	21	79
2003	7441	1503	5938	20	80
2004	5158	958	4200	19	81
2005	5085	847	4238	17	83

Source: estimates according to results of Central statistical Bureau's survey of professions

The ratio of men and women employed in this profession is 1:4. Disregarding the fact that this job is physically hard, exhausting and monotonous in hot conditions, often organised in shifts, even night shifts, there is a trend that the proportion of women employed in this industry increase. In 2005, the proportion was 83% while in 2000 the proportion of women was 80%.

The number of bakeries is evenly distributed among Latvian statistical regions, except for Riga city and the Riga region (Pieriga) in which 53% of all employed bakers were concentrated in 2005. The respective indicator in Latgale and Zemgale was 13%, in Kurzeme – 12% and in Vidzeme – 9%.

Table 1.2

Average gross wages a month by professions

Indicators	Total				2005/2002
	2002	2003	2004	2005	%
Total	154.82	173.21	207.79	236.81	53
Food producers	93.51	104.45	135.63	150.98	61
including: bakers and confectioners	90.33	106.67	136.38	144.44	59

Source: *Profession survey results in Latvia and authors' estimates*

Average gross wages of bakers increased by 54 LVL over the period of 2002-2005. Wages of food producers increased by 57 LVL respectively while on average in the national economy this indicator grew by 82 LVL and by the end of this period, wages reached 144 LVL, 151 LVL and 237 LVL a month respectively.

Although wages for bakers and confectioners increased at a pace of 6% faster than on average in the national economy over the mentioned period, low wages for employees in the industry accounting for 61% of the average indicator in the whole economy is one of the most significant factors not promoting qualified labour force attraction to this industry. It is also proven by the fact that all (100%) experts pointed that the lack of qualified labour force is a very important and hindering factor in providing successful performance of bakeries.

Average productivity indicators of the bakeries (net turnover relative to number of the employed) are very different during 2001-2005, the difference reach even 17-28 times. In 2001, performance of 42% of the total number of enterprises was above the average productivity indicator while in 2005 approximately 30% of enterprises functioned as successfully as before. It stresses the problem of differentiation for enterprises.

The average productivity indicators for bakeries are relatively lower than the respective indicators in the food industry. Partially it can be explained by the fact that bread production is handwork intensive. For instance, the productivity indicators in the food industry were twice as high as the respective indicators of bread producing enterprises during 2003-2005. However, several large bread producers and enterprises having significant incomes from other kids of activity have higher the respective indicators than on average among food industry's enterprises.

Purchasing and introducing modern technologies is important in increasing productivity at bakeries. According to the survey, 78% of surveyed enterprises have purchased new equipment to modernise the production process in the recent three years. 63% of bakeries acquired equipment mostly by their own financial resources, 9% - by using support of EU funds, 6% - with help of co-operation partners. Yet 11 from 51 surveyed enterprises claim that new equipment have not been acquired due to the lack of financial resources.

According to the survey data, bakeries do not specialise in producing one type of bread, but offer customers the traditional type of bread as well as a vide assortment of pastries and biscuits. It means that bakeries operating in Latvia mostly target the same market and offer homogenous differentiated products, especially regarding wheat bread. As a result, bread producers mostly compete in price, not in bread quality, innovation, originality or higher value added. Only few enterprises can stay in the market practising a price leader strategy. Small enterprises will have to pay more attention to specific niche products.

The bread market is a market of not perfect competition. It fits a monopolistic competition model and a special role is played by advertising. Only 10% of bakeries advertise their products to conquer the market and assign only 0.1% of their net turnover for this purpose. Intensive advertising is practised only by two bakeries.

2. Bread production and consumption trends

Bread output has decreased by 19.4 thousand tons or 16% if compared the years 2005 and 2000, however, changes in output of several bread types have been different – the output of rye and wheat bread shrank most – by 21.4 thousand t or 49%, the output of wheat bread decreased by 3.8 thousand tons or 6%, but the output of rye bread increased by 5.8 thousand t or 33% in the given period.

Table 2.1

Output of bread (sold volumes)

	2000	2001	2002	2003	2004	2005
Total (thsnd t), including:	120.7	123.0	122.5	115.6	110.9	101.3
Rye bread,%	15	15	18	19	19	23
Rye-wheat bread,%	36	35	31	27	27	22
Wheat bread,%	49	50	51	54	54	55

Source: *Latvian Macroeconomics in Numbers 2006 and authors' estimates*

The structure of bread output has considerably changed during 2000-2005. In the studied period, the proportion of rye bread output increased from 15% to 23%, that of rye-wheat bread output decreased by 14% and in 2005, it accounted for more than 1/5 of the total bread output – 22%, but the proportion of wheat bread output accounts for 55%, which was 6 percent points more than in 2000.

The output of bread has been impacted by bakeries set up at supermarkets over the recent years. According to the survey data, 53% of the surveyed experts claim that supermarket bakeries substantially affect the bread market, especially it relates to wheat bread goods.

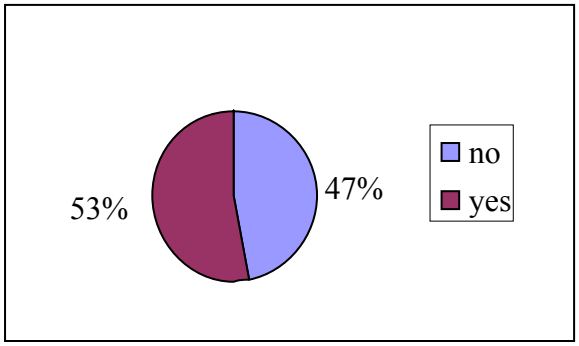

Figure 2.1. Effect of supermarket bakeries on bread output

The bread market in Latvia is a limited local market as bread export and import volumes relative to bread output are insignificant. According to the survey data, 23% of surveyed bakeries export bread, and they are both large bakeries and small and medium enterprises. The most popular countries for exporting bread are Lithuania, Estonia and the USA.

According to the survey data, bread products of bakeries are mostly sold at several supermarket chains, for instance, Rimi Group, VP Markets, Elvi, Nelda, Beta etc. as well as at retail stores and stores belonging to bakeries. 8% of surveyed bakeries sell bread only at their own stores, 4% of bakeries sell bread only at retail stores because not all bakeries can meet requirements set by supermarkets, for instance, to sell bread at a discount price, to pay for shelves at supermarkets and to provide large price cuts etc.

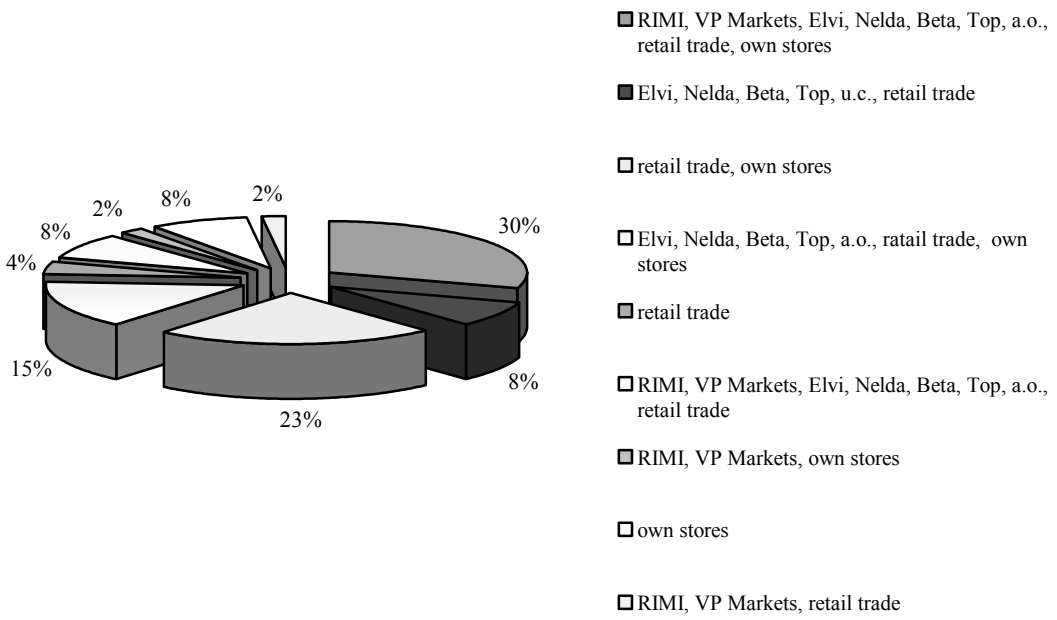

Figure 2.2. Sales places for bread

The total bread consumption has decreased by 22 kg and currently is 55 kg per capita a year in Latvia over the recent 10 years. The consumption of rye and wheat bread has decreased considerably – by 15 and 8 kg respectively, but changes in the consumption of sweet and sour bread were insignificant. The changes in bread consumption are related to the fact bread is not used for feeding domestic animals, a decrease in the number of Latvian population, the lack of knowledge on bread as a valuable product and other factors.

In 2006, individuals consumed 25 kg of rye bread, 24 kg of wheat bread, 6 kg of sweet and sour bread and other bread types. This bread consumption pattern ensures that the largest proportion in the structure of bread consumption belongs to rye bread – 46%, the proportion of wheat bread is 43%, those of sweet and sour bread and other bread types are 11% respectively. It has to be mentioned that on average 6 kg of biscuits, pastries and macaroni are consumed annually per one household member.

According to authors' estimates, bread prices increased differently over the recent five years. Rye bread prices increased most – by 75%, sweet and sour bread prices – by 64%, wheat bread prices – by 50%, rye-wheat bread prices – by 43%, but toaster bread prices increased least – by 34%. The highest price increase was observed in 2006 when the prices grew by 12-25%, depending on a type of bread.

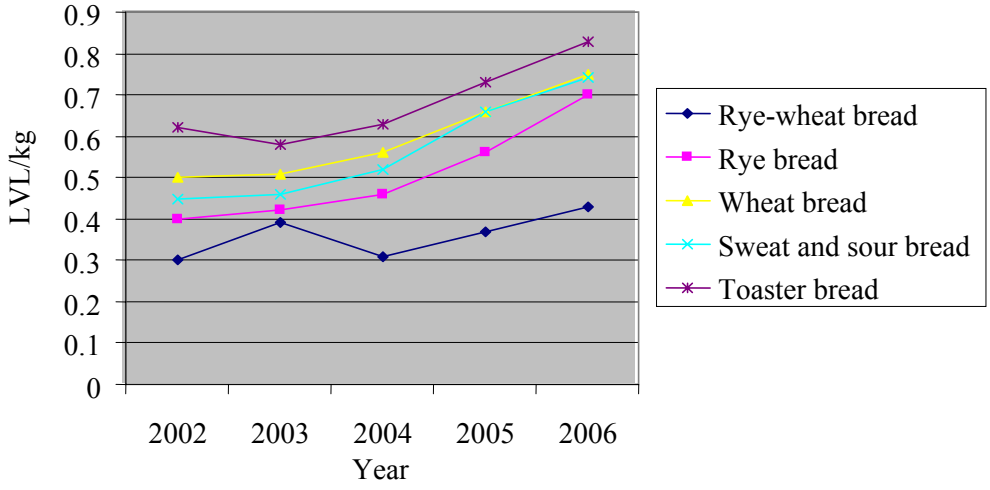

Figure 2.3. Average bread prices at the end of year (LVL/kg)

Source: Consumer prices in 2002-2006 and authors' estimates

As a result of the bread price increase, expenditures on bread in households increased by more than 2 LVL per household member during 2002-2005. However, the proportion of expenditures on bread remained unchanged in total expenditures on food at 7%. The proportion of expenditures on bread goods also remained unchanged at 15% in total expenditures on food. Approximately 15% of household food income is spent on vegetables and potatoes, a bit more – 17 – 18% is spent on milk, cheese, eggs, but the largest proportion of food income – 26 – 27% is used for purchasing meat products.

Bread production is energy and labour intensive. The main input for bread production is flour, therefore, the key factors impacting a bread price increase are related to a rise in prices of these resources. Authors' estimates show that electricity costs increased 23%, fuel costs – 43%, gross average wages – 1.8 times, natural gas costs rose even 3 times during 2002 -2006. Due to a drought causing smaller crops, there was a significant increase in grain sales prices. The bread prices will be affected by an increase in costs due to complying with EU standards and due to convergence of EU and Latvian bread prices.

There are many bread goods, in each country, bread goods are very diverse, and therefore, bread price convergence is problematic. On average, a loaf of industrially produced wheat bread weighing about 400 g or rye bread weighing about 700 g cost 2-2.5 euros in old developed EU countries. In Poland, the Czech Republic and Hungary similar goods cost about 1 euro or 70 santims (Āboltiņš J., 2006). An average price of bread (LVL/kg) in Luxembourg was 2.22, in Belgium – 1.96, in Austria – 1.84, in France – 1.87, but in Latvia – 0.45 LVL/kg (Graudiņš U., 2004).

3. Analysis of key financial indicators for bread producing enterprises

The average ratios of total liquidity for bread producing enterprises in the period from 2001 to 2005 are > than 1, however, these indicators have decreased over the recent 3 years. A more detailed analysis shows that on average 11 enterprises (17% of the total enterprise number) have total liquidity ratios of < 0.5. It implies that these enterprises have problems with meeting their liabilities.

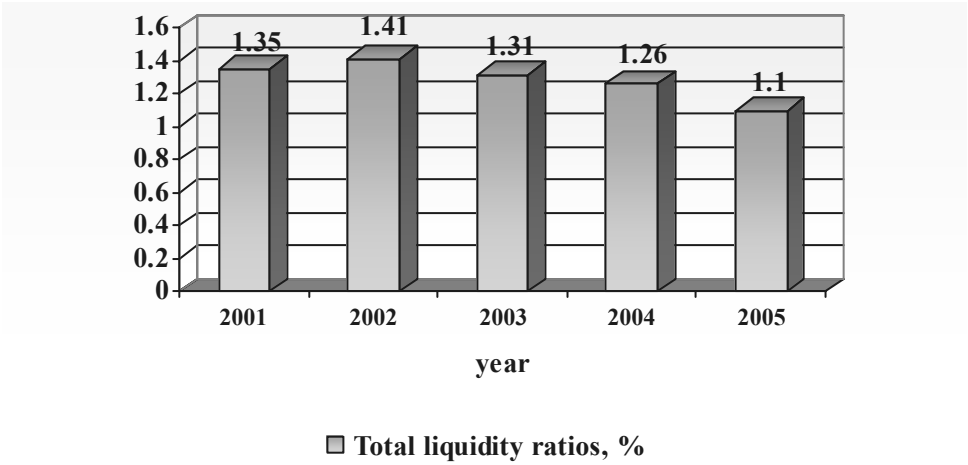

Figure 3.1. Average ratios of total liquidity for bread producing enterprises, %

Source: estimates according to LURSOFT data

Overall, all the profitability indicators are very low in the studied period, indicating that most of enterprises of the bread industry perform inefficiently.

After analysing the profitability indicators for concrete enterprises, one can conclude that:

- by the end of 2005, the number of enterprises having a turnover profitability rate of more than 5% has increased, accounting for 26% of the total number of enterprises. If compared to 2001, the profitability rates have increased by 11%;
- asset profitability rates have increased only by 4% in the same period and by the end of the period the respective rates of more than 10% were observed at 27% of enterprises;
- an analysis of liquidity of own capital show that around 30% of enterprises have a rate of more than 20%, while around 40% of enterprises have a rate of less than 0%, and it substantially affects the average rate of profitability of own capital in the sector of bread production.

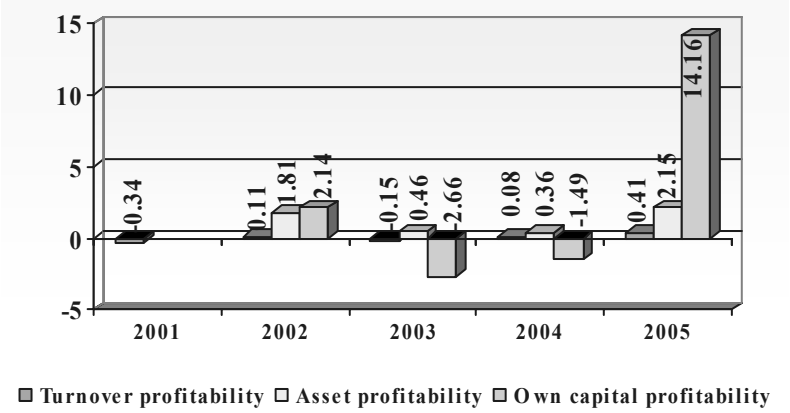

Figure 3.2. Average profitability indicators for bread producing enterprises, %

Source: estimates according to LURSOFT data

Table 3.1 shows that own capital increased only 4% in the above-mentioned period, but short-term debts increased most. The indicator of long-term debts is very volatile in the studied period, varying within 30% range in total. It implies that bread-producing enterprises have few long-term liabilities, and the number of bread producing enterprises, which have only short-term debts, proves it.

Table 3.1

Ratios of average indicators according to balance statements for bread producing enterprises, %

Indicators	*2005 / 2001 (%)*
Own capital	***4 %***
Borrowings from credit institutions	***7 %***
Short-term debts	***37 %***
Long-term debts	***78 %***

Source: estimates according to LURSOFT data

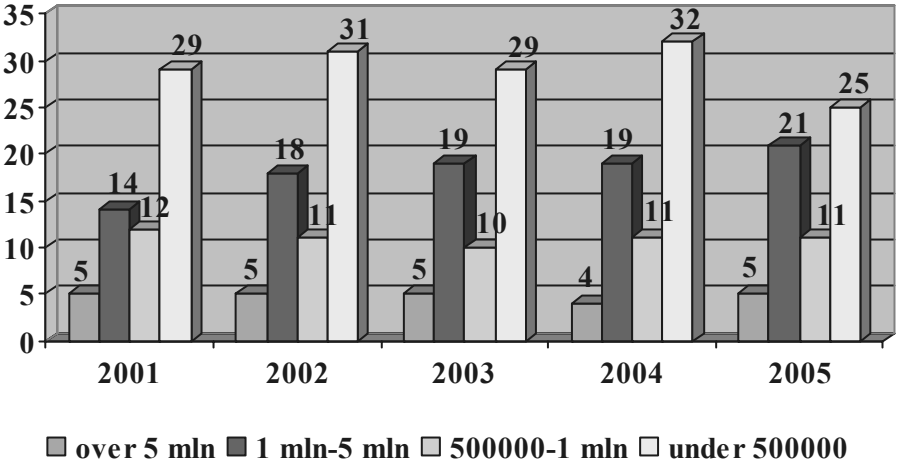

Figure 3.3. Division of bread producing enterprises by net turnover

Source: estimates according to LURSOFT data

In the studied period, the number of bread producing enterprises whose annual net turnover exceeds 1 million LVL increased. There were 26 such enterprises in 2005, accounting for 42% of the total number of enterprises. The number of enterprises with net turnover 1-5 million LVL also increases. There were 21 such enterprises (33% of the total number of enterprises) by the end of 2005.

The net turnover of bread producing enterprises increased by 14% in 2005 if compared to 2001, however, production costs grew at a faster rate. On average, production costs increased 28%, sales costs – 56% and administration costs – 27%. With an increase in borrowings from credit institutions, interest payments also grew. Net profits increased 36% in the given period.

Table 3.2

Ratios of average indicators according to income statements of bread producing enterprises, %

Indicators	2005 / 2001 (%)
Net turnover	**14**
Production costs of sold products	**28**
Production costs	**54**
Administrative costs	**27**
Interest payments	**14**
Profit before taxes	**93**
Net profit	**36**

Source: estimates according to LURSOFT data

A data analysis proved that the profitability of bread producing enterprises is affected by income gained from other activities.

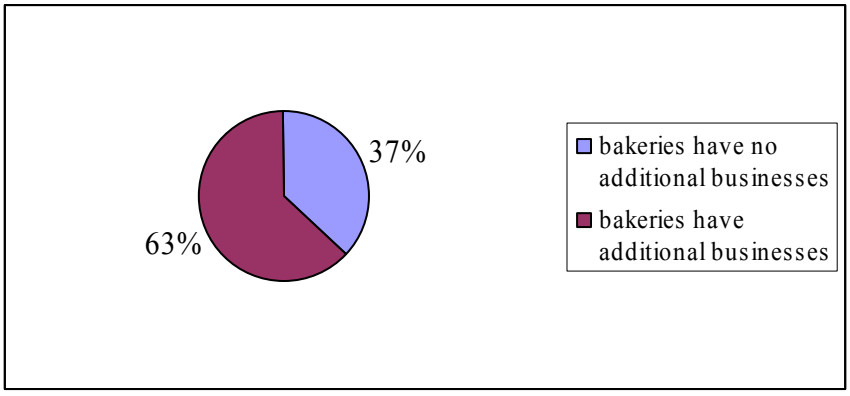

Figure 3.4. Bakery experts' opinion on diversification of activities for enterprises

Source: survey data and authors' estimates

63% of the surveyed bakeries have additional economic activities, and only for 37% of bakeries bread production is the main and only economic activity. As an additional business in most cases, entrepreneurs develop public catering, for instance, cafes, hotels, recreation centres as well as they are engaged in agricultural, real estate business etc. It means that many bread-producing enterprises have found other perspective areas for development in case of abandoning the main economic activity under the existing tough competition.

Conclusions

1. A decrease in the number of bread producing enterprises, dominance of micro, small and medium enterprises indicate that there is tough competition in the bread market and this market is reinvaded.
2. Large bakeries and requirements set by supermarkets impact development of the bread market.
3. Further development of large bakeries is related to optimising their performance, retaining a market share and producing high quality bread goods. Small bakeries should find their niches producing specific, original bread goods.
4. Bread producing enterprises largely differ by sales indicators, therefore, introduction of modern technologies has to be promoted.
5. Increasing wages and providing the bread sector with qualified specialists are the most important factors for successful development.
6. During 2000 – 2005, the output of bread goods significantly decreased and the bread consumption structure changed. The proportion of rye bread and wheat bread consumption increased while that of rye-wheat bread decreased.
7. The largest changes were observed in the consumption of rye bread and wheat bread, however, these two types of bread hold the largest proportions in bread consumption.
8. The consumption of sweet and sour bread is equal to that of pastries, biscuits and macaroni. It points at consumption priorities of population.
9. Bread price changes will take place in the future as factors causing a bread price increase maintain their significance and topicality.
10. Profitability indicators for bread producing enterprises are very low, and stability of profits is impacted by incomes from other types of economic activities.

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ECONOMIC ANALYSIS OF THE VALUE ADDING CHAIN IN MILK SECTOR

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Abstract

The study deals with the value adding chain in milk sector examining production and market situation in milk production and processing stages by analysing set of factors what determine the value added in each stage. Evaluation of relations between different stages of the value adding chain in milk sector is also included. The objective of the study is to determine the level of development of the value adding chain in milk sector and to give proposals how to increase the value added. Presently milk production is the only sector in Latvia what considerably exceeds self-sufficiency level. Therefore, the development of this export-oriented sector will be determined by competitiveness in foreign markets. Comparative advantage of lower external costs and capital consumption has determined competitiveness of milk resource export up to now, however in the future reduction of intermediate costs as well as creation of special value will be the measures of main priority to ensure competitiveness together with adequate income level. The value adding chain in milk sector is evaluated to be in the process of development. Strengthening of horizontal and vertical cooperation will give a considerable increase in the efficiency of formation the value added.

Key words: milk production, milk processing, the value added, the value adding chain, competitiveness

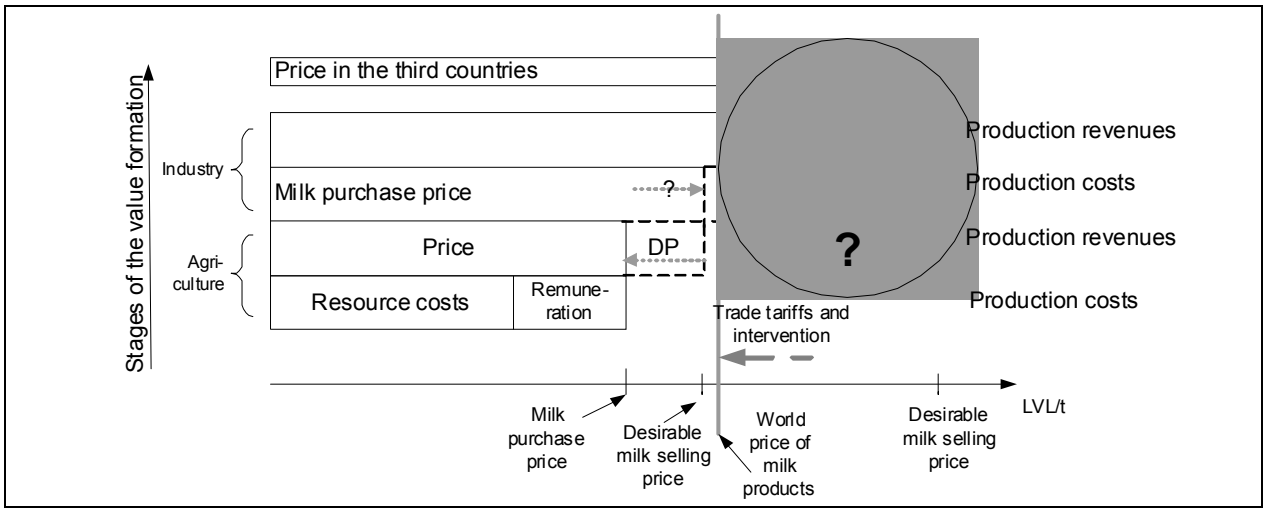
Background

Milk production is one of the key agricultural sectors in Latvia. Over recent years milk has established its positions with annually increasing share in total production value. There has been only a slight change in volumes, the main contributor to the growth of milk production values are prices, which have risen considerably after Latvia joined the EU single market. The share of milk production constitutes 25% of total agricultural output at producer prices in year 2005, and that is the biggest result among individual products and product groups [14, 30]. Milk processing also forms 21% of total food processing output value [15].

Besides upward production values, there is also increase in external assets value in the External Balance sheet. However some internal and external factors are signalling about possible threats to stabilization and development achieved in milk sector already in the near future.

The reformed EU Common Agricultural Policy (CAP) as an external factor affects the current system breaking the former economic balance in the sector and creating contradictions between structure of revenues and production costs. Resolution of this problem causes one of the biggest challenges to milk production and processing sector. It becomes crucial to question the viability of agriculture as market oriented business activity. The aim of the EU CAP Reform is market oriented agricultural entrepreneurship what envisages majority of subsidies to be paid independently from the volume of production, decrease in level of intervention (or at least not to increase) in markets of agricultural products (including gradual opening of the EU market to the third countries). Expected loss of coupled payments means significant decrease in income generated from milk production.

One of the simplest method how to compensate for losses in income is to raise prices, however this method can turn out not to be feasible because processing industry's ability to pay for resource is also limited by competition on final consumption markets. There is also movement to gradual lifting of production restrictions, the present milk quota system expires in year 2015, however different speculations place it under doubt whether existing quota system will long till then. It is expected that liberalization of agricultural markets – departure from intervention and quota systems as well as mitigation of external trade barriers – also restrict future growth in prices.



*DP – direct payments

Figure 1. Effect of reformed CAP on economic balance in the sector

Source: LSIAE constructions

Some internal factors also indicate on significant development problems that can be caused already in near future. In terms of net value added per employed person, what is one of the most widespread efficiency as well as sector competitiveness indicators, Latvia is considerably falling behind when compared to the EU average level and majority of other EU countries. According to FADN data net value added of grazing livestock specialization farms in Latvia in year 2004 constituted only 31% of the average EU level [18]. As regards processing sector, the output of total food industry per employed person in Latvia compared to the average EU gross value added per employed person level is already 1.7 times less, so net value added is lagging behind even more [17].

Objectives and methods

Aforementioned problems raise **two crucial questions**. Firstly, whether it is possible and, if it is, how to increase economic efficiency of production without raising product prices to ensure adequate income level for employed persons in the sector. Secondly, whether it is possible and, if it is, how to produce goods for what buyers in final consumption market are ready to pay more.

In order to answer these questions the analysis of the value adding chain in milk sector was carried out. The primary **objective of the study is to determine the level of development of the value adding chain in milk sector and to make proposals on how to increase the value added**. To reach the objective several **tasks** were set - to carry out production and market economical analysis and to evaluate the formation of the value adding chain in the sector by graphical depiction of the results of this estimation, as well as to formulate proposals for raising the value added.

The value added (VA) was assumed to be additional value, what is created (added to the intermediate product) in each successive stage of production, starting from primary production and ending with the marketing (from farm to fork) and what is distributed among owners of factors of production (land, enterprise, capital and labour). In value terms, it is calculated as the difference between production value and intermediate consumption. The analysis of the value adding chain in milk sector was carried out by analysing group of factors what determines the value added in each stage of the chain. Production and market analysis covered resource production and processing stages but in the schematic summary all stages what milk sector can be divided into (including trade) are considered. Theoretical assumption envisages that in the framework of each stage the VA can be increased by larger amount of production, by increasing of output prices and reducing the costs of production. In the sector as a whole, the formation of the VA is determined by such factors as vertical coordination and consumption. Improvement of vertical coordination can give a significant increase in the formation of the VA. Total food consumption, which is represented by amount of consumed goods and prices, serves as a reference point for making decisions about production of resources and processing of products. Changes in consumption patterns should be followed by the corresponding changes in the production of resources – in terms of not only volume, but also the quality features.

Methods applied in the study include quantitative and qualitative analysis methods. Statistical analysis and logically constructive analysis methods are employed to summarize data analysis, brainstorming and interview results.

Results of the value adding factor analysis in milk production stage

Economic analysis of volumes in milk production stage shows that the present production level (806.8 thsd tons in 2005) is low when compared to milk production in mid 90ties, however when compared to internal consumption level the self-sufficiency outcome is 121% in year 2005 (see Table 1), that means that this sectors is export oriented.

If the whole amount of milk were produced in market-oriented farms, then the initial milk quota for Latvia would be already filled at the present production volumes, however at the existing structure of farms there is small reserve. Milk quota for Latvia is 728,6 thsd tons (including additional quota) [13, 51].

When looking at the price, as can be seen from the Table 1, after slight fluctuations in the previous years, there has been considerable increase after Latvia joined the EU single market. This price is taken from the Economic Accounts for Agriculture (EAA) and it covers those kinds of uses that according to the methodology are included in the output of the agricultural industry. For milk, these are all uses, except losses, consumption in livestock feed and processing on farms.

Table 1

Selected indicators of milk sector in Latvia in 2000-2005

Types of indicators	2000	2001	2002	2003	2004	2005
Volume of produced milk, thsd tons	823.0	845.9	811.5	783.1	784.0	806.8
Milk producer price, LVL per ton	83.88	93.56	92.16	93.96	127.10	154.63
Share of dairy cows in farms with 10 and more cows, %	26%	30%	31%	37%	39%	42%
Volume of sold milk to processing companies, thsd tons	398.1	402.6	384.9	435.6	463.6	501.7
Milk purchase price, LVL per ton	87.17	95.52	94.09	96.09	131.06	155.20
Sales value of milk products*, thsd LVL	85 882	95 050	101 602	103 193	126 072	151 526
Average selling price of the main processed milk products, LVL per kg	0.36	0.41	0.42	0.45	0.48	0.64
Export value of milk products, thsd LVL	11 594	12 789	11 741	14 234	26 220	43 489
Average export price of milk products, LVL per kg	0.61	1.02	1.04	1.05	0.94	0.70
Self-sufficiency level, %	96%	102%	100%	102%	107%	121%

*sales value of those processing companies that meet statistical requirement of at least 20 persons employed and turnover of the previous year over LVL 300 thsd

Source: CSB of Latvia and the EAA data [1-8], [14], [15], [19], [20]

According to Dairy Committee LTO Netherlands International Milk Price Comparison of the milk prices paid by large European dairy companies, the average calculated price of for standard milk containing 4.2% fat, 3.35% protein, a bacterial count of 24.999 per ml, a somatic cell count of 249.999 per ml and a yearly delivery of 350 tons was 286.5 EUR per ton in year 2005 [16]. In Latvia the average purchase price of milk expressed in EUR constituted 220.8 EUR per ton at the average fat content 4.25% and the average protein content 3.31% [19], but the price received by the most qualitative milk producer cooperatives for their milk sold to Lithuanian processing companies has already reached the price level dominant in West European countries. Having regard of the export oriented characteristic of the sector, the rise in average price of the milk is possible only if there is structural improvement in milk production sector (increase in amounts delivered from one farm and improvement in the average quality of milk).

At the present the structure of milk producing farms is very fragmented with a large share of small farms what each separately produce insignificant amount of milk. In year 2005, 78% of total milk producing farms was subsistence farms with one or two cows and they concentrated 58% of total dairy cows. The share of market-oriented farms (not less than 10 cows) in total farm number was only 4% [1, 28]. Although the average yield in subsistence farms is lower, the share of produced milk in total milk production is still large.

At the present milk production structure, the sector creates smaller added value when otherwise possible, because in subsistence farms milk is mainly used for self-consumption needs, that means no incorporation of this milk in subsequent stages of the value adding chain, besides there is low productivity in these farms and consequently high production economic costs.

The situation is starting to improve lately because there is tendency in the sector towards decrease in number of dairy cows in farms below 10 cows and increase in farms with 10 and more dairy cows (see Table 1) what have much better productivity and higher share of milk sales. Despite the decrease in total number of dairy cows, the total volume of milk has been almost unaffected due to higher average milk yield, furthermore there is rise in total volume of sold milk to processing companies. However the rate of the structural changes is slow.

Table 2

Costs in grazing livestock specialization farms in Latvia in 2002-2004

Types of costs	Costs per livestock unit, LVL			Costs per production value, LVL			Changes, +/- %	
	2002	2003	2004	2002	2003	2004	2004/2003	2004/2003
Total costs	529	501	604	1.00	0.92	0.85	21%	-8%
Intermediate consumption	407	392	494	0.77	0.72	0.69	26%	-4%
Capital consumption	36	45	53	0.07	0.08	0.07	20%	-9%
External costs	81	59	52	0.15	0.11	0.07	-13%	-34%
Production taxes	6	5	5	0.01	0.01	0.01	9%	-17%

Source: LSIAE calculations based on FADN data [10-12]

Together with increase in producer prices, there has also been considerable growth in production costs. The average cost level per livestock unit in FADN grazing livestock specialization farms (production of milk and cattle) was LVL 604 in year 2004 what is 21% more than the year before. The distribution of costs among individual cost positions is shown in Table 2.

When compared costs per production value in year 2004 with the appropriate cost level in year 2003, there is even decrease by 8% because growth in milk and cattle prices exceeded increase in resource prices in year 2004. In the future increase in ordinary milk prices has no economic basis, but it is expected that resource prices continue to grow, and that means that if not reduced otherwise, costs per production value will increase.

Comparison of costs per production value shows that Latvia with 85% of total costs in output value has better ratio than the EU average share of 92% [18]. Total costs in Latvia are reduced by less value of external costs (compensation for employees, rents and interest paid), as well as smaller value of consumption of fixed capital. In terms of the value added these costs are also part of income received by owners of the factors of production, so greater costs (income) correspond to larger value added, but as regards competitiveness in market – it is decreased by higher price because of higher costs. Present level of external and capital costs positively affects competitiveness of local products but this is attained at the expense of lower income level. However there is a rapid increase in these costs lately, consequently Latvia is going to lose this comparative advantage in terms of competitiveness very soon.

The level of intermediate consumption in Latvia is higher than in the EU on the average. Among individual cost position there is comparatively large share of energy (14% - for Latvia and 5% - the EU average) and livestock feed (41% - for Latvia and 29% - the EU average) costs in the total cost value [18]. Consequently, these are the costs whose reduction can normally increase the value added because possibilities to increase the value added at the expense of price and volume at the present condition are almost reached their limits. Improvement of intermediate cost efficiency is also the way of ensuring competitiveness at the adequate income level for owners of the factors of production including compensation for employees.

As analysis of production costs per production value in farms of different size shows that in small farms the average intermediate consumption level is higher than in medium and big farms, structural changes in farms structure also will facilitate the overall increase in cost efficiency. The total cost level per production value is higher in bigger farms due to larger labour cost level.

Results of the value adding factor analysis in milk processing stage

Comparatively large amount of milk resources has determined the development of milk processing. At the present the volume of local resources is limited by quota, but still only 62% of total produced milk is sold to processing companies.

In milk processing industry there is a high level of concentration (Top 4 = 61% and Top 10 = 83%) what indicates the market power of these companies [19]. However in comparable terms Latvian milk processing units are small. During year 2000 until 2005 the volume of purchased milk by processing companies has grown and it has reached 501.7 thsd tons in year 2005 (see Table 1). There were 13.7 thsd tons of imported milk without packing [19], thus the volume of resources available for processing industry totalled 515.4 thsd tons with only 3% of resource import. In the same time it has to be stressed that according to Latvian Central Dairy union estimates the total annual processing capacity reaches 1.25 mio tons of milk, so the present utilized capacity is only about 40%. The calculation states that increase in total utilized capacity by 100 thsd tons of milk (it equals the volume of milk what is presently exported as resource) could rise the average price for milk resource in the whole industry by about LVL 0.005 per kg without any changes to amount of costs.

The most important product of milk processing industry in terms of sales value is cheese (26% of total sales in year 2005), then followed by milk and cream (16%), unripened cheese, including curd (14%), unflavoured acidified milk products (14%), butter (8%) and flavoured acidified milk products (7%). During years 2000-2005 sales of all products have increased, the fastest growth has been for flavoured acidified milk products (about 6 times when compared to year 2000) and for cheese (about 3 times) what has now become explicitly the most important product. The considerable growth is mainly due to increase in production volumes. From the main products only the volume of sold milk has dropped in this period [15].

As regard prices, milk purchase prices have grown faster than sales prices for processed milk products (61.5% and 32.9% accordingly in 2005/2003). Having regard of approximate share of milk resource price in price of processed milk products, the calculations show that increase in milk resource price is not fully incorporated in prices of processed milk products. That means decrease in the value added of the processing industry at the expense of these costs. When estimating the actual share of milk purchase price in sales prices of different processed milk products, it has considerably grown for products of lower price, but for products of higher price, the increase is not so notable. This also indicates on not fully incorporated rise of the milk resource price in the sales prices of processed products because there was no reason for drop in other costs that also could explain the increase of the share. Based on selling prices, all processed milk products can be divided into high price (cheese, butter, unripened cheese and curd) and low price (milk) products. As mentioned before, the share of products with the highest sales prices has increased, but the share of milk what is product of the lowest price has fallen. When year 2005 volumes expressed in year 2000 prices, the average-selling price also has risen due to increase in the share of higher price products (LVL 0.36 per kg in 2000, but in 2005 – LVL 0.45 per kg). However there is still dominance of low price products in the total volume of sales, what is indicated by the average price [15].

Analysis of financial statements of enterprises under NACE classification "Manufacture of dairy products" (1.1. – 15.5.) during years 2003 – 2005 shows that costs associated with production of milk products exceed turnover and there has been profit only due to income from other activities. Costs of the main importance in terms of proportion in total cost value are production costs (other costs – sales costs, administrative costs etc.), during years 2003-2005 they have grown more rapidly than revenue from sales – production costs have risen by 55%, but net turnover – by 52% [19].

According to interviews with milk processors milk costs count for the major part of total production costs (70%), other materials and services constitute about 19%, personnel costs – 5%, but electricity and fuel – 3%.

There is significant export of milk production what constituted 26% of total sales value in year 2005. The main commodity exported is cheese what counts for almost half (49%) of total export value, then followed by milk and cream, milk powder and butter. As regards volumes, low price products dominate in the export. The average export price of processed milk products was LVL 1.41 per kg in year 2005 [19]. In the last few years the most rapid growth has been for milk resulting in decrease in the average export price of milk production (see Table 1). It has to be mentioned that milk export volumes mainly consists of milk as resource. Overall, the dual movement of milk has grown because import volumes of unpacked milk have also increased. Export of milk resource has negative effect on processing companies' international

competitiveness due to additional burden of unutilised capacity what increases fixed costs per produced item. As a good factor, there has also been considerable growth in volumes of exported cheese.

Evaluation of the value adding chain in milk sector

In Figure 2 is given a schematic summary of the value adding chain in milk sector throughout all stages. The chain can be described as dual because one part of the resources goes to further processing (62%), but the other part is consumed on farms or sold directly to end consumers in direct sales (from farm).

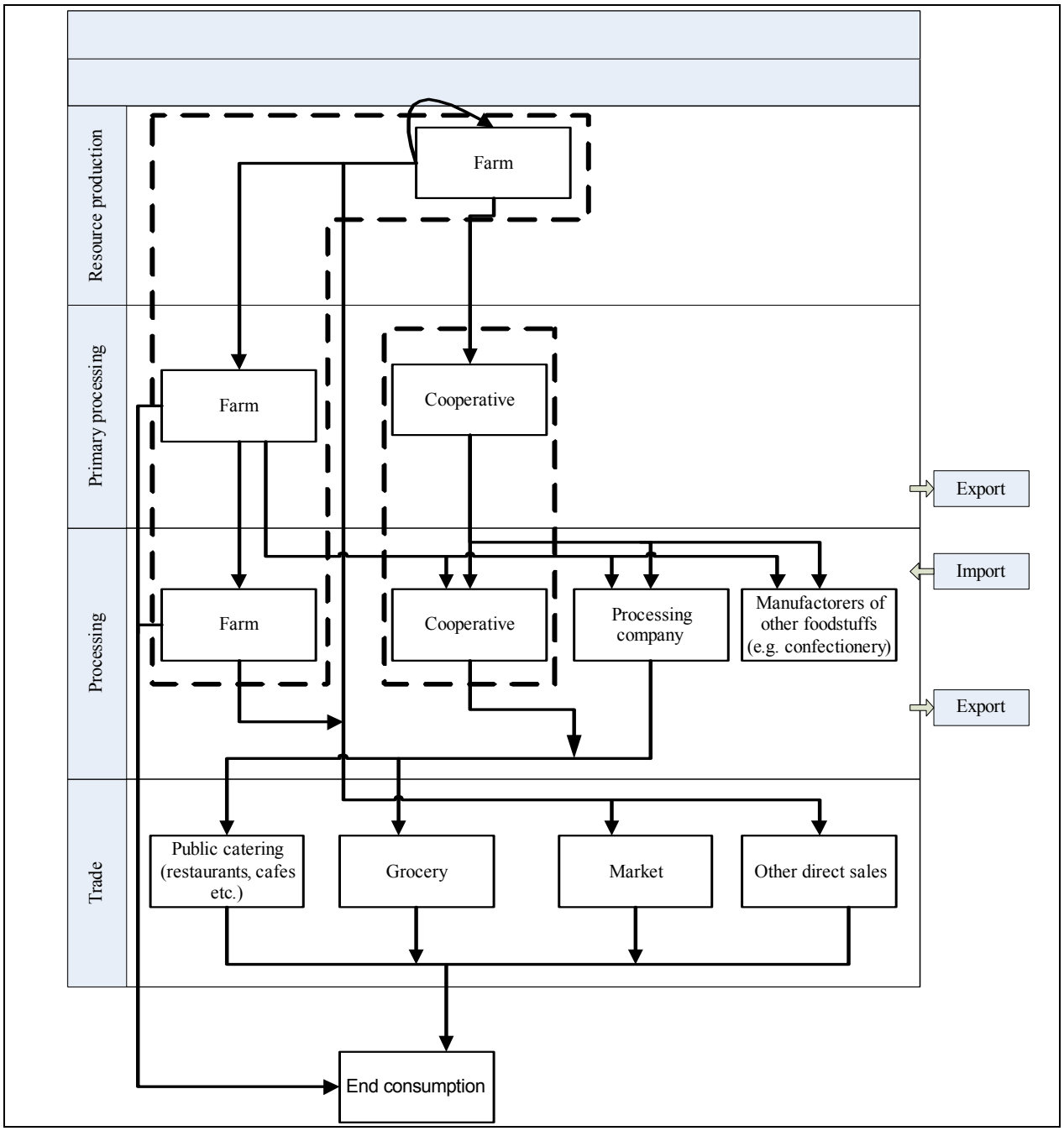


Figure 2. The value adding chain in milk sector

Source: LSIAE constructions

Export of milk products occurs in processing stage as both export of milk resource for further processing and export of milk products ready for consumption or as inputs in production of other goods.

There is some evidence of vertical integration in the sector (see discontinuous lines) when in one unit several activities what overlap more than one value added stage are performed. Cooperation between participants of the chain has also started to establish, especially in milk production stage, thus facilitating milk primary processing (refrigeration) and logistics.

However the major part of enterprises engage in undetermined cooperation based on undetermined date (or volume) agreements what do not ensure lasting cooperation. Having regard of different business goals of each of enterprise, the cooperation based only on contractual relations can come to end by change in the situation in market and change in distribution of market power.

When looking at consumption what affects formation of the value added in the sector as a whole, milk products account for 16.8% of total food expenses and that is the second largest result [9]. From years 1999 till 2003 there has been upward consumption trend for milk products, although last three years it has slightly dropped. Together with increase in income, consumption of butter and whole milk has decreased, but consumption of yoghurt and cheese has increased. The tendency is expected to continue in the future setting production patterns for the sector.

Conclusions

To conclude, even if milk production volumes remain at the present production level what is most possible having regard of present milk quota and changes in farm structure, at the present volume level Latvia already considerably exceeds self-sufficiency level, thus the development of this export-oriented sector will be by all means determined by competitiveness in foreign markets.

There is strong cooperation among producers in milk production stage what positive aspect is because to a certain extent this has enabled to address problems caused by fragmentation (small production volumes and quality) and thanks to cooperation producers of milk have secured significant increase of milk price what has now reached the EU level. Having regard of the milk sector export-oriented characteristic in Latvia and the fact that milk prices in the EU are regulated by intervention system, in long-term milk prices in Latvia cannot be higher than in other EU countries, therefore future forecasts for milk price predict stabilization (in the framework of certain product quality). So it is very important to consider benefits of cooperation because in the future cooperation should also give contribution to raising cost efficiency (first-hand livestock feed and energy costs) what compared to volume and price is still subject to significant improvement. On the other hand, cooperation has facilitated increase in export of milk resource. Presently competitiveness of milk resource in export markets is determined by comparatively lower capital and external costs. However export of milk resource raises burden of unutilised capacity on total costs consequently weakening competitiveness of processed milk products in final consumption markets and relieving entry for import goods. It can be assumed that increase in capital and external costs will diminish profitability of milk export what together with weakened processing industry can have negative effect on income level of milk resource producers and the competitiveness of the whole sector. As to prevent these problems, it is important to recognize milk sector in which up to now the value adding chain has been developed weakly as one entity with high production efficiency in all stages of the value adding chain and to have these stages connected with each other, as well as oriented to end consumers and with a single aim of creating product what is competitive in foreign markets.

Proposals on increasing the value added

Efficient value adding chain means high intellectual and technical development of all stages, as well as readiness and interest of all participants to collaborate with the aim of delivering product from farm to final consumption market in compliance with specific quality, quantity and other conditions. Therefore the main tasks in achieving this include increasing of production efficiency both in milk resource production and milk processing stage, as well as facilitation of vertical coordination in the value adding chain.

Analysis of production costs of milk processing companies showed that milk resource costs are of the main importance in the total cost value and also in determining the price of the final product, with low

labour productivity in terms of the value added in production stage at the same time. Therefore it is of main priority to raise production efficiency in milk resource production stage.

Increase in the efficiency of formation the value added can be achieved not only by changes in volume, price and costs, it also crucial to decrease the number of employed persons in the sector provided that the production is lead by highly qualified specialists. The main proposed actions include stimulation of farm structural changes by support to market-oriented farms, promoting cooperation and providing product quality control, as well as creation of new workplaces outside the sector. Among the actions is also provision of additional knowledge and skills for employed persons in management, production technology, collaboration and in modern means of communication, as well as support to investments, including standard models. Switch from cost competition to quality competition what means creation of special value products (brand, organic products etc.) is another possibility for raising the value added. In the future cost efficiency could be outdone by importance of special value what is real or emotional because advantage from cost efficiency gains also has limits.

Current situation in milk processing stage is the reflection of the consequences caused by inefficiency – high production costs result in weak competitiveness in final production market, due to fragmented production structure and additional burden of unutilised capacity on production costs processing companies cannot afford to pay appropriate price for qualitative milk resource.

Increase of production efficiency in milk processing stage is important because of additional value that can be added to primary milk production sector product during this stage. Besides changes in volume, price and costs, production efficiency in this sector is also closely connected with reduction in number of employed persons and with recruitment of highly qualified specialists in both management and production. Problem of fragmentation of processing companies and unutilised capacity can bet tackled by supporting cooperation and engagement of the companies in joint projects, providing product quality control and compensating for withdrawal of capacity. Proposed activities for raising production efficiency in this stage also include improvement of knowledge in management, production techniques and brand, as well as measures concerning introduction of modern technological solution in processing stage (managerial software, scientific research projects etc.). Creation of special value products can turn out to be crucial in increasing the value added.

It is not any more competitiveness of agriculture alone but the competitiveness of the whole production and processing chain what should be considered. Vertical coordination between different stages is important because it reduces unproductive costs in the chain (intermediary, excess transportation costs etc.), promotes determined and directed development of the sector by delivering product from farm to fork and by conducting information from end consumer to resource producer what regards changes in demand and in different features necessary to be taken into account when offering resource to processing industry and processed products to end consumers. Vertical coordination does not mean decrease in competition, but it is the way of strengthening positions and improving long-term competitiveness for operating in the EU single market. Proposed actions in this respect include stimulation of vertical cooperation by different measures aimed at development of collaboration between participants of different stages as well as promotion of vertical integration what means participation in more than one stage of the chain.

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THE CHOICE OF TECHNOLOGICAL VARIANTS OF SOIL TILLAGE AND SOWING FOR GROWING CEREALS

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Abstract

The article deals with a method for economically justified choice of machinery for the cultivation technologies of agricultural crops, cereal production being used as an example. The essence of the method is that minimum specific costs are determined for the discussed technological variants taking into account the amount of the performed work as well as the assessment of the selected tractor aggregate by the economical expediency of its operational width. Besides, the price of the tractor, its share related to a unit of the performed work is considered. The discussed technological variants differ by their technical equipment and the way the technological operations, such as ploughing, soil preparation and sowing, soil tillage without ploughing, separate sowing and loosening soil to a different depth, soil tillage with simultaneous sowing, are performed. The limits of economical efficiency of the discussed variants of soil tillage and sowing technology are determined depending on the amount of the performed operations.

Key words: Technology, technical equipment, aggregate, specific costs.

Introduction

Introduction of new technologies means additional capital investments in the renewal of technical means, which, in its turn, increases the depreciation costs that are one of the main components in the prime cost of the product. For example, in the cost structure of grain production they constitute 11...15%. The value of the specific depreciation costs related to a unit of the performed work is inversely proportional to the amount of the performed work or the obtained product, and, consequently, is dependent to a great degree on the volume of output of agricultural crops on the farm. Therefore application of modern technical means and technologies requires their optimum economical correlation with the amount of the performed operations.

The article has the following **aims:**

- Working out a method for the assessment of various variants of technical equipment for the technology of soil tillage and sowing cereals;
- Evaluation of variants and the choice of an optimum variant by the criterion of minimum costs.

Materials and methods

In order to achieve these aims and solve the tasks of the research, the following materials were used: scientific publications, specialised literature, data from Central Board of Statistics and SIA Vaderstad.

The methods applied in the research: logical constructive, monographic, logical analysis, statistic and graphic methods.

The research methodology of the technologies for agricultural crop cultivation includes the following main parts:

- *Processing of the input data for the flow sheet.*

By using the existing basic flow sheets, a technology is drawn up for the proposed crop to be cultivated.

- *Selection of possible technological variants for the technical equipment of the cultivated crop and the expected crop capacity (e.g. 5 tons/ha) on the basis of the drawn up flow sheets.*

The technological variants for the cultivation of the selected crop are determined taking into consideration the existing resources of the farm. The drawn up flow sheet contains the technical means which should ensure the execution of the technological operations considering agro technical requirements, or their fulfilment as paid services, as well as the production materials (seeds, fertilisers, chemicals, etc.) which are necessary to obtain the preset yield.

- *Data processing*

The accepted technological variants determine specific costs depending on different amount of the performed work according to the economical and mathematical model of their calculation [1] presented further. The economical and mathematical model of specific costs has the following appearance:

$$Z = \sum_{1}^{n} \left(\left(\mathbf{A_i} + \mathbf{TP_i} \right) \mathrm{K_i}\ \Omega^{-1} + \left(\mathbf{A_{ij}} + \mathbf{TP_{ij}} \right) \Omega_{\mathbf{ij}}^{-1} \right) + \sum_{\mathbf{1}}^{\mathbf{n}} \mathbf{C_i} + \sum_{\mathbf{1}}^{\mathbf{n}} \mathbf{C_i^I}$$

where: Z-specific costs, \$/ha; A_i – depreciation deductions of the energetic means for the **i**-th technological operation, \$; TP_i **-** deductions for the maintenance and repairs of the energetic means for the **i**-th technological operation, \$; K_i - the share of work of the **i**-th technological operation in the annual amount of work performed by the energetic means; Ω^{-1} **-** the annual amount of work performed by the energetic means, ha; A_{ij} - depreciation deductions of the j-th agricultural machine in the **i**-th technological operation, \$; TP_{ij} - deductions for the maintenance and repairs of the j-th agricultural machine in the **i**-th technological operation, \$; Ω_{ij}^{-1} - the annual amount of work performed by the j-th agricultural machine in the **i**-th technological operation, ha; $\mathbf{C_i}$ - the costs of fuel and salaries in order to execute all the technological operations, \$/ha; $\mathbf{C_i^I}$ - the costs of seeds, fertilisers and chemicals, \$/ha; n- the number of the performed operations.

The account does not include the real estate tax, insurance of the machines and crops, maintenance of the melioration system, repayment of credits and their interests, etc.

Calculations are made by means of the Microsoft Excel programme.

Results and discussion

Several authors (Boruks A., et al., 1999, Betriebsplanung Landwirtschaft, 2006/07) were engaged in the study of technologies for the production of cereals, however these sources do no discuss the choice of an optimum ploughing and sowing aggregate.

Let us discuss the selection of the optimum economical technological variant by the example of grain production with different technical equipment for soil tillage and sowing depending on the production output. The calculated specific costs per hectare include: depreciation deductions; maintenance and repairs; fuel; salaries; the prices of seeds, mineral fertilisers and chemicals.

The proposed example discusses grain production technologies in four variants of technical equipment for soil tillage and sowing, the remaining components being constant. The data are presented in Table 1.

In the first variant the aggregate CASE MX 305+TopDownTD 500 was used which has the following operating tools: disks, looseners, levelling disks, a roller. It is used for soil preparation without ploughing with simultaneous sowing. The depth of loosening reaches 26 cm. The second variant: the aggregate McCORMICK ZTX 230 +Carrier CR 500, which is similar to the first aggregate, yet it has no looseners, the depth of loosening is 10...12 cm. The third variant: the aggregate McCORMICK ZTX 230 +Kverneland EG-85-300HD 6k (a reversible plough with six bodies). The fourth variant: the aggregate McCORMICK ZTX 230 +Rapid RD 400C – a combined seeder for sowing in the stubble, as well as after the soil is prepared, with the aggregates mentioned above. It has two rows of disks, a drag, compactors and looseners.

By using the above-mentioned economical and mathematical model it is possible to calculate the specific costs depending on the technologies with four variants of technical equipment for soil preparation and sowing. .

The data obtained as a result of calculation allow us to draw graphs (see Figure 1).

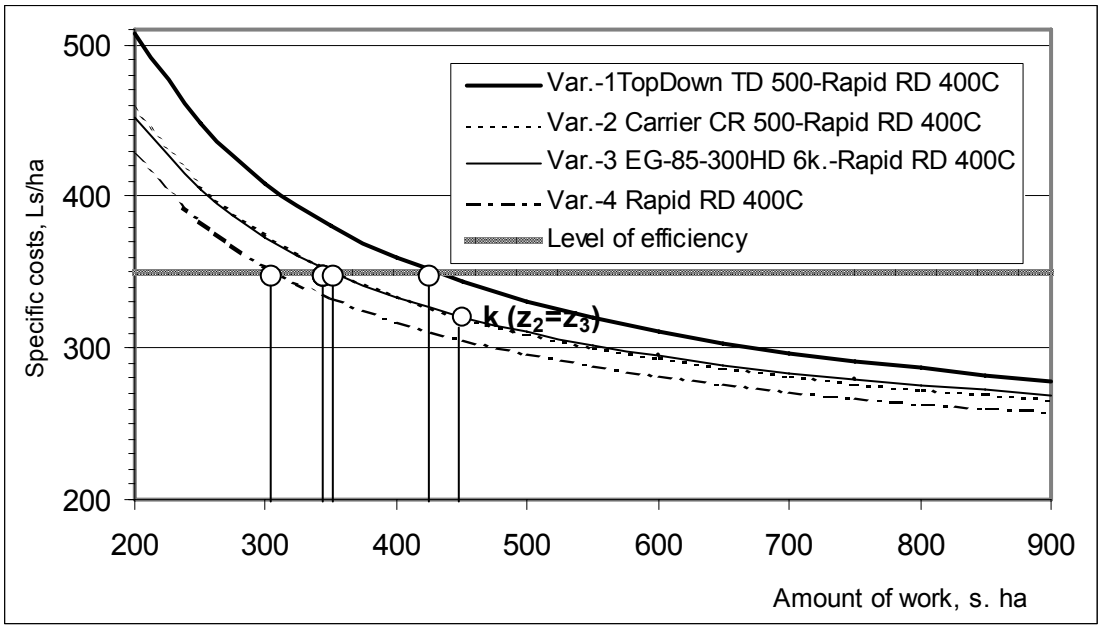

Figure 1. Variations of specific costs of the technology depending on areas under crop and different variants of soil preparation and sowing

It is evident from Figure 1 that the specific costs per hectare and, consequently, per ton of the produced grain decrease when the area under crop increases, and they have various values in the variants of technical equipment considered. The specific costs of the fourth variant within the whole range of the performed operations are less in comparison with the 1st, 2nd and 3rd variants. The greatest specific costs per hectare for the range of the performed operations under discussion are in the first variant. At cross point «K» of two curves of specific costs in variants 2 and 3 of the technical equipment of the technology the values of their specific costs are equal (Z_2=Z_3 if Ω = 450 ha). Variant 3 is more economical for the amount of the performed work Ω = 450 ha but, when Ω>450 ha, it is variant 2. Within the considered range of performed operations the average difference in the specific costs between variants 2 and 3 is ±1,9Ls /ha. It is also evident from Figure 1 that in case the curves of the specific costs for the variants of the technical equipment of the technology under discussion do not cross each other, the most economical in this case is only one variant in which the specific costs throughout the entire range of the discussed operations are less.

Figure 1 also shows the limits of the economical efficiency of the technology with the variants of soil preparation and sowing. A straight line is drawn from the axis of ordinates on which the meanings of individual specific costs are marked reflecting the income per hectare when the purchasing price of grain is 70 Ls/t (the typical price during the recent years) and the expected crop capacity of the technology under discussion is 5 t/ha (70 Ls/t x 5 t/ha =350 Ls/ha). This value is equal to the specific costs per hectare, which is the limit when profitability R=0. The cross points of the curves of the specific costs for the compared variants and their corresponding values on the axis of abscissa show the limit at which the discussed variant still has economical efficiency. Thus, when the first variant is applied, the economical efficiency starts from the amount of work 426 ha, that of the second variant – from 353 ha, the third variant – from 351 ha and the fourth variant – from 307 ha. The data indicate that each variant of the technical equipment of the technology to be considered has its limit of economical efficiency depending on the amount of the performed work.

Variations in the specific costs of the technology, on the whole, and the discussed variants of technical equipment for soil preparation and sowing depending on the amount of work are presented in Figure 2.

It is obvious from Figure 2 that it is the first of the four considered soil preparation and sowing technological variants which has the highest specific costs. In variants 2-3 they differ insignificantly, but the fourth is the most economical among the four variants under discussion.

Table 1

Variants of technical equipment for soil tillage and sowing of cereals

Variants of technical equipment	I	II	III	IV
Tractors	CASE MX 305, McCormick ZTX 230, MTZ -1025	McCormick ZTX 230, MTZ -1025	McCormick ZTX 230, MTZ -1025	McCormick ZTX 230, MTZ –1025
Prices of tractors, Ls	187940	88820	88820	88820
Agricultural machines	Combined aggregate for soil preparation **Top Down TD 500, combined seeder RD 400C,** sprayer HARDI, trailer 2PTS-4, combine harvester MF-36 RS 5.45 m, grain cleaner VS-1, dryer GK-1.	Combined aggregate for soil preparation **Carrier CR 500, combined seeder RD 400C**, sprayer HARDI, trailer 2PTS-4, combine harvester MF-36 RS 5.45 m, grain cleaner VS-1, dryer GK-1.	**Plough EG-85-300HD 6k., combined seeder RD 400C**, sprayer HARDI, trailer 2PTS-4, combine harvester MF-36 RS 5.45m, grain cleaner VS-1, dryer GK-1.	**Combined seeder RD 400C**, sprayer HARDI, trailer 2PTS-4, combine harvester MF-36 RS 5.45m, grain cleaner VS-1, dryer GK-1.
Prices of agricultural machines, Ls	191640	161259	156273	139017
Seeds, mineral fertilisers, chemicals	Seeds – 0.23 t/ha , KEMIRA POWER – 0.6 t/ha, Grandstars – 0.015 kg/ha, Citovets – 0.1lt/ha, LONTRELS – 0.2 l/ha, Raundaps - 2.5 l/ha, BI –58 - 1 l/ha, Alto- 0.2 l/ha.			
Prices of seeds, mineral fertilisers and chemicals, Ls/ha	167.1			

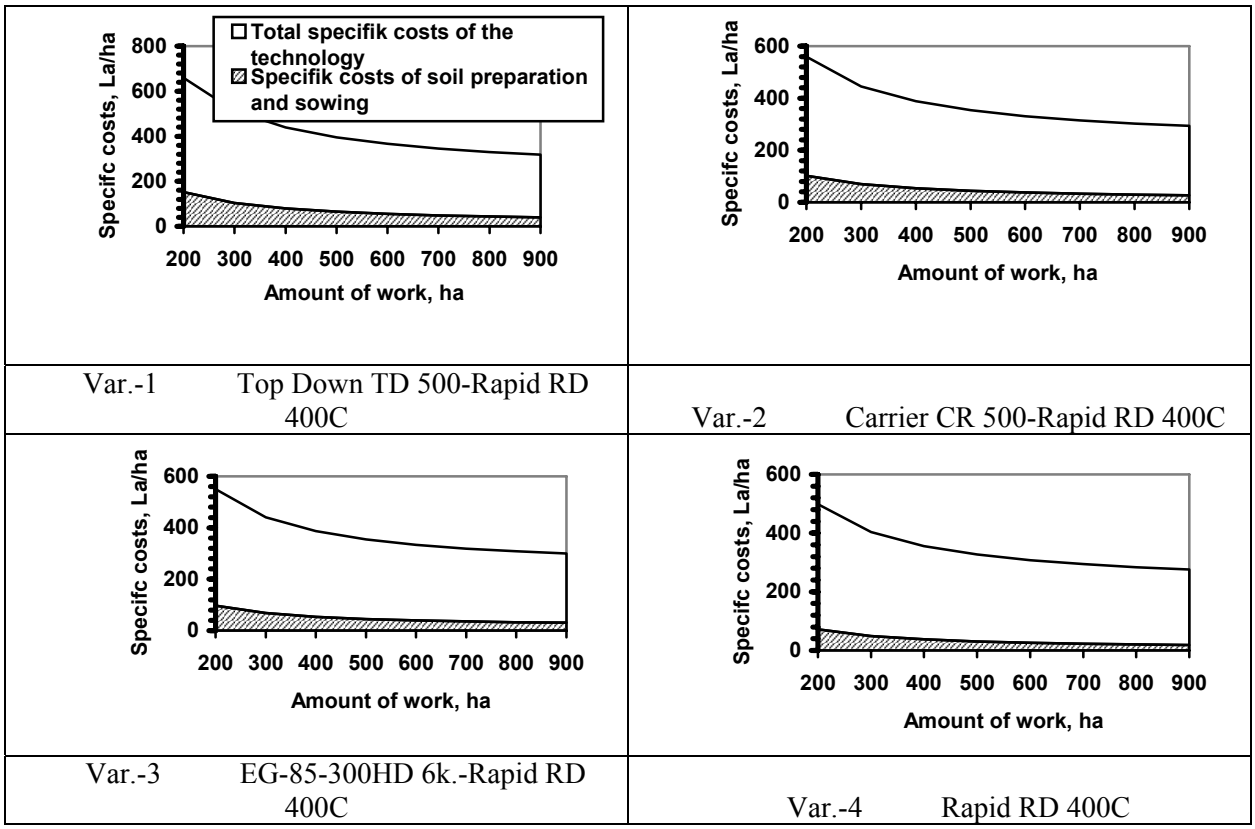

Figure 2. Variations in the specific costs of the technology and the variants for soil preparation and sowing depending on the amount of work

Variations in the specific costs of the technology and technological operations of soil preparation and sowing within the discussed range of the performed work at its maximum and its minimum values are presented in Table 2.

Table 2

Variations in the specific costs of the technology and technological operations of soil preparation and sowing

Variants of soil preparation and sowing technologies	Total costs of the technology, Ls/ha		Costs of soil preparation and sowing* from the total, in %	
	Areas under crop, ha		Areas under crop, ha	
	200	900	200	900
TopDown TD 500-Rapid RD 400C	506.87	278.47	30.09	14.28
Carrier CR 500-Rapid RD 400C	456.83	266.19	22.43	10.32
EG-85-300HD 6k.-Rapid RD 400	452.03	269.24	21.60	10.21
Rapid RD 400C	426.59	257.49	16.93	7.29

*the sowing costs do not include the price of the seeds

In this example preference is given to the fourth variant of soil preparation and sowing (see Table 2). If the annual amount of work is 200 ha, the specific costs of the technology are by 15.8%, but at the amount of 900 ha – by 7.5% less than in the first variant. Besides, the percentage of the specific costs of soil preparation and sowing is respectively by 13.2 and 6.9% less. The data also indicate that this difference decreases when the amount of the performed work grows.

Taking into account the circumstance that there is an economically expedient working width of the aggregate for each amount of work, let us define the amount of work for the above-mentioned tractor

aggregates with minimum costs using the economical model presented in [2]. The calculated data are given in Table 3.

Table 3

Optimal costs of the aggregates under discussion

Name of the aggregate	Working width, m	Price of the agric. machine, Ls	Price of the tractor, Ls	Amount of work, ha	Costs, Ls/ha
CASE MX 305+TopDown TD 500	5	52623	99120	2000	8.58
McCORMICK ZTX 230 +Carrier CR 500	5	22242	78470	1200	6.33
McCORMICK ZTX 230 +Rapid RD 400C*	4	41262	78470	1350	10.35
McCORMICK ZTX 230 +Kverneland EG-85-300HD 6k	2.4	17256	78470	300	19.34

* direct sowing
Note. The costs of maintenance and repairs are not included into the calculation.

If we take the first variant of the technology with the technical equipment which includes the soil preparation aggregate CASE MX 305+TopDown TD 500 and increase its annual load to 2000 ha (at the expense of offering services), which corresponds to the minimum costs for the given aggregate, then the percentage of the specific costs of soil preparation and sowing will decrease by 14.8%, and by 3.6% in comparison with the load when the amount of work is 200 and 900 ha, presented in Table 2. Besides, the limit of economical efficiency by the amount of the performed work in the first variant of technical equipment of the technology will not be 426 ha, but 325 ha if only the soil preparation aggregate CASE MX 305+TopDown TD 500 has the annual load less than 2000 ha.

The data show that in case the technical equipment of the technology is formed, it is important to take into account the fact that such parameters of the tractor aggregate as its working width are closely connected with the amount of the performed work, the price of the energetic means, fuel and salaries. Therefore the working width has a definite optimum economical value for the amount of the performed work.

Conclusions

The discussed method for the choice of different variants of the technical equipment of the technology shows that the costs of soil preparation and sowing at the preset limit of its economical efficiency constitute 13.7...21.5% of the total costs of the implemented technology.

The economical efficiency of the variants of technical equipment considered here starts from the amount of 426 ha of the performed work in the case of soil preparation without ploughing, deep loosening and separate sowing, but with the deep loosening of soil to the depth of 10...12 cm – 353 ha; in the case of ploughing with separate sowing the amount of work is 351 ha, and with direct sowing – 307 ha.

The present method for the choice of the technical equipment of the technology allows selecting the economically most justified variant of soil preparation and sowing, as well as other variants.

When the technical equipment of the technology is formed, it is necessary to take into account that each set of the applied aggregates has an optimal economical value of its basic parameters.

Among the variants discussed above the economically efficient is a variant which combines the technological operations of soil preparation and sowing in contrast to soil preparation without ploughing and separate sowing. The specific costs are reduced by 15.8% if the annual out is 200 ha, and by 7.5% if the annual output is 900.

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FARMERS' DECISION CONCERNING ENERGETIC PLANTS CULTIVATION IN WEST POMERANIAN REGION

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Abstract

West Pomerania belongs to the areas most penetrated by the foreign companies on Polish - German border. The reason for it is its forestry and agricultural potential. This is also the specific area where biomass based business started earlier than in other parts of Poland. The heating and power station "Dolna Odra" was one the first in Poland that achieved governmental permission for combined heating (coal mixed with wood chips). Big biomass purchases announced in 2005 by "Dolna Odra" power station had its impact on biomass prices. This started a kind of "price war" between big factories that use biomass for production of hard wood plates, hard wood pellets and briquettes and for production of paper which last till today. All those old biomass users had to compete with a relatively new player on the market. What is more, German heating stations in Demmin, Neustrelitz, Beeskow , Schwedt am Oder, Berlin und Koenig – Wusterhausen have been joining the competition. All of them are placed in border or cross – border area that actually allows them to import biomass from Poland for fair prices. All of them are trying to have exclusive contracts with local forestry administration or local sawmills to cover their own demand with supplies from Poland. This "price war" actually could support farmers who decided to cultivate willow (Salix Sp.) – an energetic crop that delivers biomass directly from a field. More and more farmers are thinking about establishing a plantation, but there are only few who really know how to do it. On the one hand it could be an occasion for additional income for a farmer, on the other hand it brings huge amount of problems with harvesting, storage on a field/or on a solid (concrete or asphalt) square, and finally loading of trucks and transportation as a final part of the logistic chain. Because of technological reasons, wood chips made out of willow are designed only for heating purposes. Big paper factories from city of Swiecie or Kostrzyn are not interested in it; the same as hard wood plates producers. The only demand on the market will strictly correspond to the demand of heating stations, both Polish and German. The paper presents personal opinions of interviewed farmers concerning their own pros and cons regarding the cultivation of energetic crops.

Key words: Biomass, energetic crops, willow, co-firing, impact on agriculture

Introduction

On the one hand, Poland's accession to European Union in 2004 opened European market for Polish products and services, on the other hand, Poland had to accept a lot of EU directives and legal acts. Poland had to make up its mind how to adapt the country to EU standards in the shortest time. One of the areas where Poland has to adapt to the EU law was the energy market. Due to pre – accession negotiations Poland is obliged to increase the percentage of renewable energy in the whole energy production. In 2010 the level of renewable energy production in the whole electrical energy production of the country should reach the level of min. 7,5%. In 2005 renewable energy quota in the electrical energy production oscillated at the level of 3%. The figure 1 presents the data.

This tendency means that in the few years the quota of renewable electrical energy has to be redoubled. What is more, the general energy consumption tendency in the world lets researchers estimate that the era of fossil fuels will end in the next 80 – 120 years. Unlike fossil fuels, biomass is renewable in the sense that only a short period of time is needed to replace what is used as an energy resource. Biomass is a material that can be processed to create heat, steam, hot water, electricity, or alternative fuel, such as ethanol. Biomass is organic material such as wood, crops and animal wastes that can be used as fuel in either raw or processed form. The increasing request for biomass will characterize not only local Polish market. The same situation will occur in all new EU members so called "new fifteen".

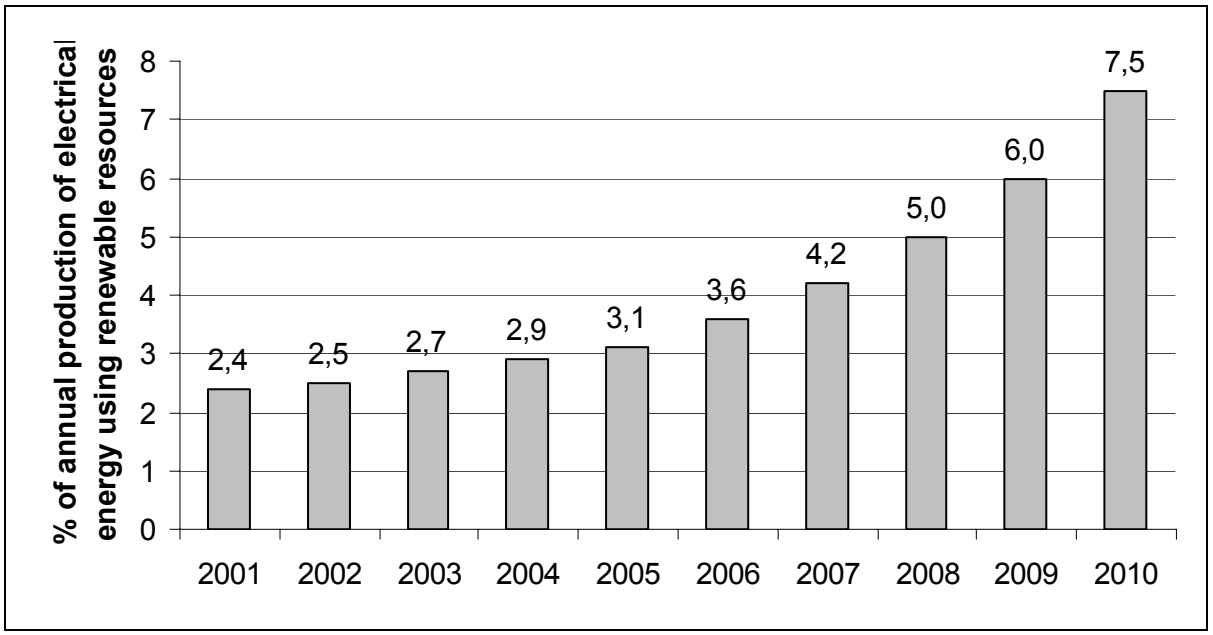

Figure 1. The level of obligatory quota of renewable energy in annual production of electrical energy in Poland.

Source: Oniszk- Popławska A.: „Dostosowanie polskiego prawa do prawa UE w zakresie odnawialnych źródeł energii: EC EBRC 2004

Due to the limited resources of biomass offered by forestry and affiliated industry (sawmills, paper industry), there is a big chance for agriculture in West Pomerania to become a strong place on the country map where cultivation of energetic plants is developed on a high level. First, there are many propitious factors to the development of energetic crops cultivation: the local Polish – German cross – border market with five potential big heating stations, enough agricultural land in private possession after decomposition of former State Own Farms (PGR). Second, a relatively mild climate, much better than, for example in Sweden, with longer vegetation period, should ensure good increase of biomass of an energy plantation.

Table 1

Estimated minimal quota of renewable energy in whole production of electrical energy in the new EU members.

Country	Annual production of energy from renewable resources in 997 (TWh)	Quota of renewable energy in production of electrical energy in 1997 (%)	Estimated quota of renewable energy in production of electrical energy in 2010 (%)
Czech Republic	2,36	3,8	8,0
Estonia	0,02	0,2	5,1
Cyprus	0,002	0,05	6,0
Latvia	2,76	42,4	49,3
Lithuania	0,33	3,3	7,0
Hungary	0,22	0,7	3,6
Malta	0	0	5,0
Poland	2,35	1,6	7,5
Slovenia	3,66	29,9	33,3
Slovakia	5,09	17,9	31

Source: Oniszk-Popławska A. Dostosowanie polskiego prawa do prawa Unii Europejskiej w zakresie wykorzystania odnawialnych źródeł energii EC EBRC 2004

Third, a high unemployment rate among former State Own Farms workers should provide enough labor at a favourable price. Energy derived from these sources is described as biomass energy and is an environmentally friendly alternative to fossil fuels. Biomass energy can be used to generate electricity and heat and also for the production of liquid transport fuels such as bio ethanol, a petrol additive or substitute and bio diesel, a diesel substitute. It is important to emphasize that all of the fuels and chemicals currently manufactured from fossil fuels can be manufactured from biomass (conversion of solar energy into synthetic automotive fuels). At the moment, when biomass-based industries in West – Pomerania are at the beginning point of own development, studies have to be conducted to identify potential biomass buyers, producers as well as barriers and propitious factors of biomass cultivation.

Discussion

Many studies conducted in the last two years, mostly by agricultural high schools and Polish Agricultural Advisory Services showed more or less similar results regarding the initial cost of establishing one ha of willow plantation. The table number two present the data.

Table 2

Calculation of cost of establishing 1 ha of willow plantation (zł/ha)

Numbers	Specification	Quantity	Price (zł)	Value (zł)
1.	Mechanical preparation of soil – fuel	12.0	3.70[3]	44.40
2.	Deep tillage – fuel	25.0	3.,70[3]	92.50
3.	Cultivation with an aggregate – fuel	15.0	3.,70[3]	55.50
4.	Willow plants	40,000[2]	0.,35[1]	14000.00
5.	Paid workers, 8 persons / ha / 8h	64h	6.,00	390.00
6.	Fertilizing NPK	4.0	18.,00	72.00
7.	Chemical treatment – monocotyledons	3.0	70.,00	210.00
8.	Chemical treatment – dicotyledonous	2.5	28.,00	70.00
9.	Chemical treatment – fuel	15.,0[4]	3.70[3]	55.50
Cost together				14,989.90

[1] the price for willow plants oscillates between 0.20 – 1,00 zł/piece, depending on the quantity of pieces and brand,
[2] in Poland there are 20,000 till 60,000 plants willow planted on 1 hectare. Average quantity is 40,000 plants/1ha,
[3] average diesel price in July 2005,
[4] cost of chemical treatment together for position 5., 6., 7.
Source: own calculation.

The research conducted in summer 2006 according to the monthly meeting with farmers coming from around two Agricultural Advisory centres in West Pomerania. The short survey had an aim to estimate the level of information about energetic crops between farmers of West Pomerania. It will be the fundament of further research dedicated to the pros and cons of cultivating the energetic crops in the West Pomerania area. One hundred twenty five farmers took part in the survey. The figure 2 presents the data.

The questions of the survey were:

1. Have you heard about energetic crops cultivation in Europe?
2. Have you heard about energetic crops cultivation in Poland?
3. Have you heard about any biomass producers in your local area?
4. Do you know potential biomass buyers in your area?
5. Did your local Agricultural Advisory Centre provide you with sufficient information on energetic crops cultivation?
6. Do you intend to start cultivation of energetic crops in the next two years?

The short analysis of the questions shows that farmers do not have enough data about energetic crops and possibilities of its cultivation under Polish rural conditions. The same refers to information about potential biomass market, about local cultivators and buyers. Less than 5% of farmers know any local biomass producers. The better tendency is observed with regards to question number six. Already 20% of respondents intend to start cultivating energetic crops in the next two years.

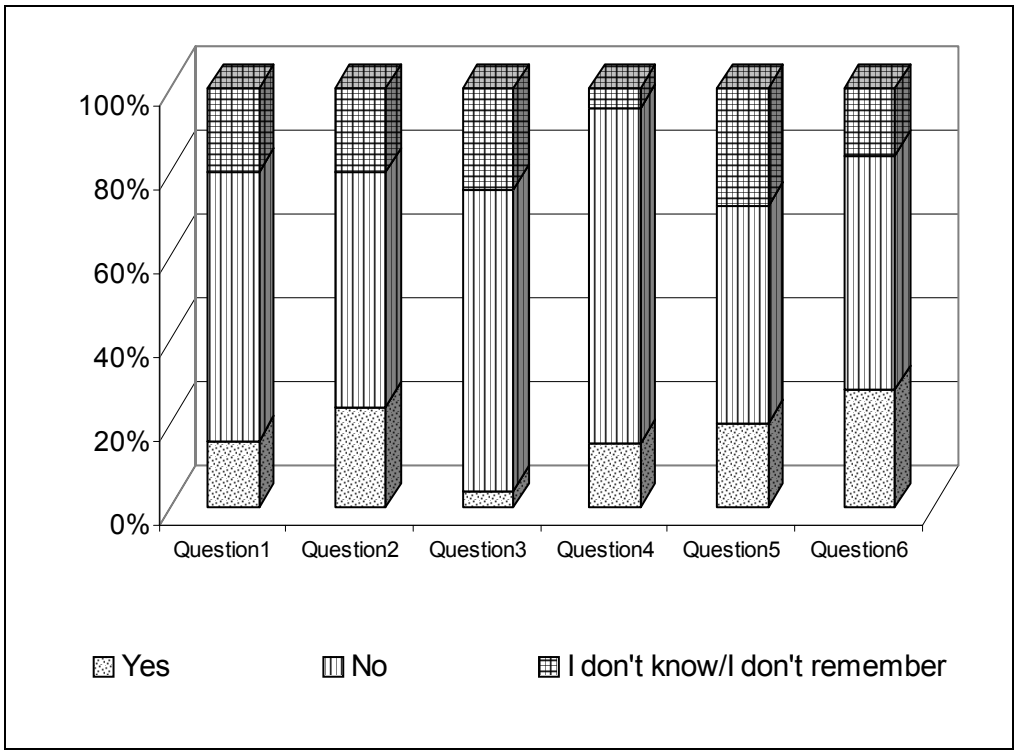

Figure 2. Response of farmer to the survey questions.

Source: own data collected in 2006.

Conclusions

The analysis of farmers' answers allows drawing the following conclusions:

1. The consciousness of West Pomeranian farmers according the possibility of starting an additional activity in the range of biomass production is on a low level.
2. The West Pomeranian farmers do not have enough information about local producers and buyers of raw biomass.
3. Only 15% of farmers were glad regarding information on biomass cultivation obtained from local Agricultural Advisory Centre.
4. Only 22% of farmers intend to start cultivating energetic crop in the next two years.

The potential biomass supplies from agriculture for heating purposes will not occur in the next five years, according to life cycle of willow (harvesting time after three years of cultivation) so, there is no chance to speed up this process because of the low level of information about energetic crops among the farmers. Now most of the farmers do not have sufficient information about energetic plants cultivation and as result of it do not intend to start cultivation.

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THE FACTORS INFLUENCING LATVIA'S CATTLE CARCASSES QUALITY AND MEAT YIELD

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Abstract

The article presents study results of main factors, affecting the quality of cattle carcass, where quality is defined as carcass grading or classification (class, category, fat cover) result, dressing percentage and meat yield. The classification result is comprised of cattle sex, age and fatness and muscle development – conformation evaluation, additionally to these factors also animal's breed or crossbreed and weight are taken into account. The paper shows analysis of bovine animals dressing percentage, where data acquired by trial method, obtaining dressing percentage of 1,228 carcasses according to cattle population and classification results. The anatomical dissection for obtaining the meat yield and meat yield ratio was done for cattle carcasses (n=118) of different classes and categories. The data were analyzed, using statistical data processing. It was established that the fat class of cattle carcass has the most significant impact on the meat yield and can be considered statistically proven; and dressing percentage and meat yield ratio for male (categories A, B and C) carcasses is higher than female (categories D and E) bovines. Also the article gives the economic evaluation of carcasses' value, using prices paid in Sweden for the cuts or beef, exported from Latvia.

Key words: cattle, carcass, quality, dressing percentage.

Introduction

The cattle breeding and beef production branch is one of the main agricultural branches for the following reasons:

- it has next highest proportion (6%) in agricultural goods value structure after such branches like milk, cereals, pork and potatoes; although till now the main reason behind this had been mostly the development of dairying in Latvia;
- it is one of the sources of manure, necessary for soil fertility assurance and conservation;
- the measure (pasturing) for grassland and meadow keeping, in order to receive area payments.

However, currently the development of this branch has been stalled by relatively low purchase price of bovine animals, compared to other EU member states.

For example, comparing category A or bull carcass purchases prices among various EU member states; we can see that in Latvia it is the lowest (Fig. 1).

The necessity of such study was further confirmed by the fact that currently existing payment system for cattle carcasses by muscles development and fat cover classes, established in Latvia's slaughterhouses, is not fair, i.e., the purchase price for bovine carcasses with higher muscle development and lower fat cover class (class U2) is lower or does not differ substantially from carcasses with lower muscle development and higher fat cover class (class O3). Thus we can come to a conclusion that bovine breeders are not interested in breeding higher quality bovine, since bovine purchasers and slaughterhouses do not stimulate it by differentiating purchase prices. Therefore, in order to ensure fair payment for bovine, payments must done, according to the bovine classification results; also, knowing factors affecting bovine carcass quality, slaughterhouses can beforehand give instructions on type of bovine to be delivered.

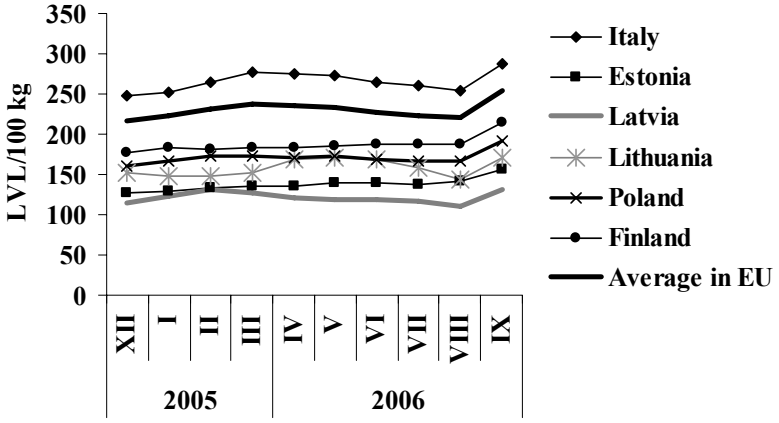

Figure 1. Dynamics of purchase price of bull's carcasses (LVL/100 kg) in EU member states, 2005 – 2006

Source: own calculations based on unpublished data of AMPC[1] *and EU*

The following considerations formed the necessity to study impact of various bovine carcass quality factors (breed, category, class of conformation and fat cover, etc.) on dressing percentage and meat yield; and to establish the cattle dressing, i.e., ratio of carcass weight to live weight, and also meat yield, taking into account carcass classification results for:

- breeders should have clear guidelines on preferable bovine quality indices;
- slaughterhouses, depending on carcass realization's kind, give their guidelines and requirements of necessary indices of delivered cattle to breeders;
- supervising authorities could inspect and find the circulation of meat of potentially unknown origin, comparing the amount of meat, obtained from purchased bovine, to amount of meat used in further processing.

Materials and methods

Trial for determination of main factors, which have an impact on quality of cattle carcasses and meat yield were carried out during 19th of June to 6th of September 2006 at the slaughterhouse of J/C "Ruks" (Cesis). In the trial 1229 bovine animals were slaughtered for obtaining dressing percentage and 118 out of them were subjected to detailed anatomical dissection for evaluating meat yield.

The indicators determined for each slaughtered cattle are as follows: identification number, breed or crossbreed, age, live weight, carcass or slaughter weight and classification class and category. Classification of cattle carcasses was made according to the requirements of Commission Regulation No 103/2006 and Council Regulations No 1183/2006.

For each dissected animal cold weight was evaluated, and after removing fats, muscles and bones weight in kilograms was estimated for the following parts of carcass: leg, tenderloin, flank, brisket, sirloin, shoulder, chuck, neck, trimming, fat and veins.

Dressing percentage of slaughtered animals was calculated using the following formula:

$$y = \frac{S * 100}{L} \qquad (1)$$

where, y – dressing percentage, %; S – slaughter weight, kg; L – live weight, kg.

[1] Agriculture Market Promotion Center

Retail beef yield of dissected animals was calculated using the following formula:

$$y = \frac{\sum (L + Te + F + Br + S + Sh + C + N + Tr) * 100}{CW} \qquad (2)$$

where, y – retail beef yield, %; L – leg, kg; Te – tenderloin, kg; F – flank, kg; Br – brisket, kg; S - sirloin, kg; Sh - shoulder, kg; C – chuck, kg; N – neck, kg; Tr – trimming; CW - cold weight of carcass, kg.

Results and discussion

Researcher K. Bruns (2005) pointed out that economically important factors for cattle evaluation are: live weight; dressing percent; muscling; fat thickness; yield grade; and quality grade, where live weight has a wider range of market weights than other species due to differences in type and maturity; dressing percent is important because it reflects the amount of carcass in relation to the animal's live weight; meat yield is an estimate of percent retail yield of the four primal cuts of carcass; and quality grades or classes (muscle's development or conformation and fat cover) and categories (sex and age); each of the classes of conformation and of fat cover shall be subdivided into five and a detailed description of the carcasses, which visually estimates classifier or grader in slaughterhouse.

Since farmers deliver to slaughterhouses mainly uncastrated young male animals of less than two years of age (Category A) and cows (Category D), because in their opinion it is more profitable. The categories structure of slaughtered animals is as following - 46% from all slaughtered animals (n=1229) represent Category A and 32% represents Category D. Detailed distribution into categories of slaughtered and dissected animals is shown in Table 1.

In the trial the generally adopted breed codes were used: HE - Hereford; HB – Holstein Black&White; LM - Limousin; CH - Charolais; LB - Latvian Brown; AB - Aberdinangus; AN – Angler; DR - Danish Red; HR - Holstein Red&White; SR – Swedish Red&White; BB - Belgian Blue. In the group "XX" were merged breeds and crossbreeds, which were represented by one to nine animals. Slaughtered animals represented different breeds and crossbreeds. Total distribution of slaughtered and dissected animals by breeds and crossbreeds are shown in Figure 2.

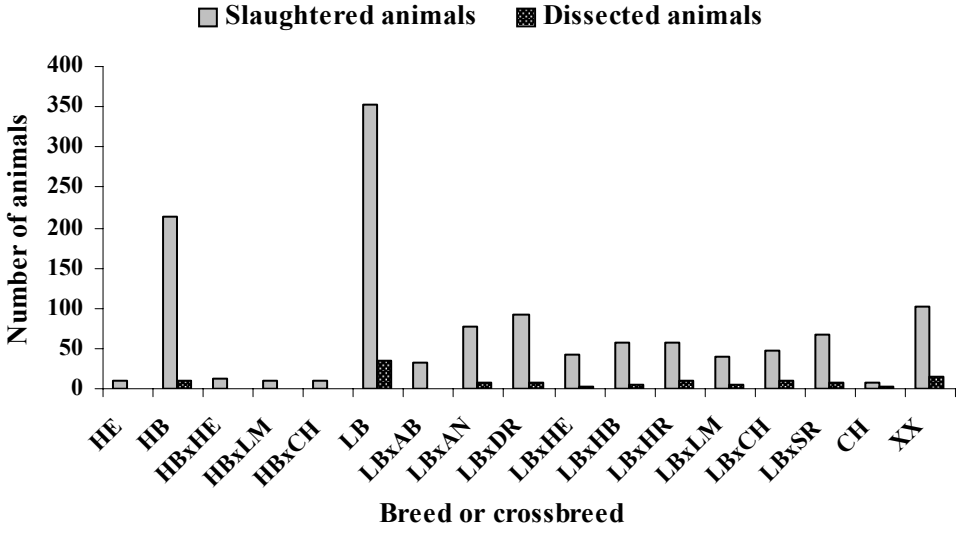

Figure 2. Distribution of slaughtered and dissected animals by breeds and crossbreeds

Source: author's calculations

The ages of bovine animals at the slaughter ranged from 1 to 187 months (cows). The basic statistics of the data are shown in Table 2.

Table 1

The distribution of slaughtered and dissected cattle by categories

Category	Slaughtered animals		Dissected animals	
	Number	%	Number	%
A	566	46	61	52
B	34	3	9	8
C	50	4	7	6
D	392	32	28	24
E	187	15	13	11
Total	1229	100	118	100

Source: author's calculations

Table 2

Statistics of slaughtered and dissected bovine animals

Variable	Slaughtered animals (n=1129)				Dissected animals (n=118)			
	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
Slaughter age, month	37.2	1	187	35.7	34.6	11	187	34.7
Live weight, kg	443.4	47	873	121.1	470.7	272	778	93.6
Slaughter weight, kg	217.7	20.6	506.6	62.5	237.7	121.8	443.2	56.8
Dressing percentage, %	49.1	34.8	62.4	4.2	50.4	38.2	62.4	4.9
Retail beef yield, %					67.7	42.9	78.5	4.8

Source: author's calculations

The selected bovine animals - just like all slaughtered bovine animals - were divided into carcass weight groups. However, since cattle were selected for dissection, taking into consideration the distribution of slaughtered bovine animals in categories and classification classes, the distribution of selected cattle carcass weight groups is similar. Most selected bovine animals' (42%) carcass weight was from 200 to 300 kg, 22% - between 250 and 300 kg, 14% bovine animals carcass weight was between 180 - 200 kg, while 11% of selected cattle carcasses weighed more than 300 kg, and the same number of carcasses had weight below 180 kg. The average selected carcass weight was 240.4 kg.

According to researches of different authors (Hunsley, 1999; McKieran et.al., 2004; Peterson et al., 2002; Yeates, Gaden, 1998) there are many factors, which affect dressing percentage, for instance: sex, age, weight, fatness, weight, muscularity, gut fill, feed type, breed, pregnancy status, weather conditions. Any factor which affects either live weight (such as gutfill) or carcass weight (such as bruising or deduction for shrink) affects dressing percentage[2] — the ratio of carcass weight to live weight; and meat or beef yield.

For selected bovine animals carcass such economically important indicators were calculated as dressing percentage, carcass weight, meat yield, as well as meat yield ratio from live weight. Dressing percentage is one of many factors affecting the value of a slaughter animal. A basic knowledge of dressing percentage is important in understanding slaughter cattle pricing system and pricing variability[3].

For the slaughtered and classified cattle carcasses the dressing percentage was calculated, characterizing ratio of the weight of carcass to animal's live weight. Summarizing the results, it was concluded that higher is characteristic for C category or bull carcasses and A category or carcasses of bulls younger than two years - 52.49% and 50.67% respectively - whereas dressing percentage for D category or cow carcass is substantially lower – 45.84% (Fig. 3).

[2] Analysis of livestock sales and carcass characteristics.
http://www.ilri.cgiar.org/InfoServ/Webpub/Fulldocs/Village/Socio.htm, accessed on 16.12.2006.
[3] Dressing Percentage of Slaughter Cattle, http://www.thebeefsite.com/articles/759/dressing-percentage-of-slaughter-cattle

That can be explained by the fact that D category bovine animals live weight is bigger than live weight of other category bovine animals, whereas this category's carcass weight does not differ much from carcass weight of other, e.g., A and B category bovine animals. D category bovine animals are on average heavier by 140 kg, but their carcass weight is on average bigger only by 45 kg.

C and B category carcasses have the highest dressing percentage of dissected bovine animals carcass, 55.9% un 53.79% respectively, A and E categories have slightly lower and rather similar dressing percentage – 51.94% un 51.47%, but D category carcasses have the lowest dressing percentage - 43.99%. A and B category cattle (bulls) carcasses have the highest meat yield, 69.57% un 69.18% respectively, C category (castrated male) has slightly lower meat yield - 68.37%, but D (cows) and E (other female) category carcasses have the lowest meat yield – 65.35% un 62.35% (Fig. 4).

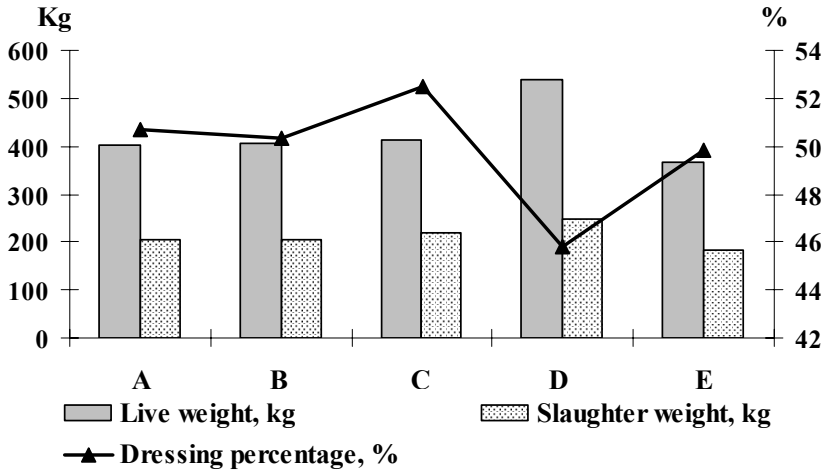

Figure 3. Comparison of live weight (kg), slaughter weight (kg) and dressing percentage for slaughtered animals that represent different categories

Source: author's calculations

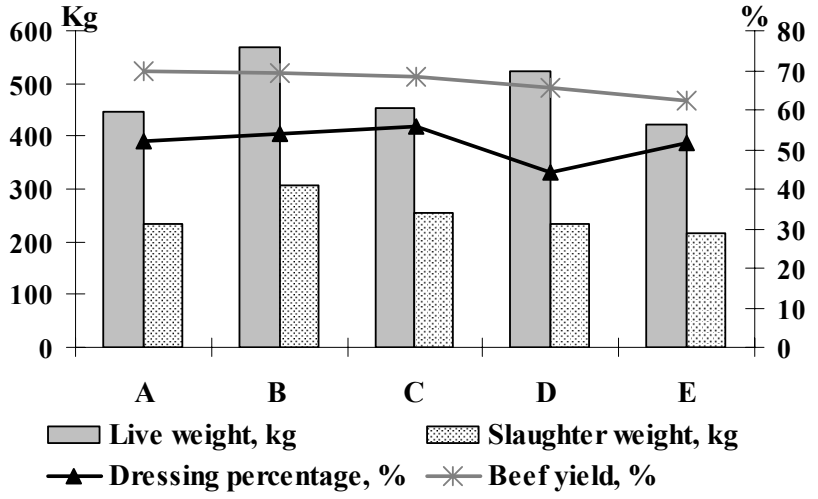

Figure 4. Comparison of live weight (kg), slaughter weight (kg), meat yield (%) and dressing percentage for dissected animals that represent different categories

Source: author's calculations

Meat yields in each category by conformation and fat cover classes show a connection - leaner carcasses, i.e., with lower fat cover class have higher meat yield. Some foreign researchers (Yeates, Gaden, 1998) have similar observations, proving in their research that fat cover increasing by 1 mm, the meat result decreases by 1%.

In A category of cattle (bulls) carcasses the highest meat yield has U1, R1 and R2 class of cattle - 78.5%, 76.1% and 77.0% respectively. The lowest meat yield is for P3 (65.6%), P4 (60.1%) and O3 (67.2%) class of cattle carcasses. For the dissected A category cattle carcasses the meat yield diminishes, decreasing bovine animal muscle development degree (U, R, O, P).

Such relation cannot be seen in B category of cattle carcasses, because O1 class carcasses have the highest meat yield (70.9%), but R3 (66.5%) and R4 (68.5%) class carcasses, which are more muscled, have the lowest meat yield. It can be explained by the fact that nine B category bovine animals carcasses were selected, each having different conformation and fat cover class. Therefore these data are not presentable and might be coincidental.

The meat yield for C and also A category of cattle carcasses diminished, when cattle muscle development decreased, whereas R1 class carcasses have the highest meat yield – 73.1%, O2 and P1 class - 70.3%; P2, O3 and P3 carcasses have the highest meat yield - 68.0%, 66.4% and 64.0% respectively.

In D category (cows) O1 un R3 class bovine animals carcasses have the higher meat yield, 73.9% and 70.6% respectively; for O2 un P2 class carcasses the meat yield is 68.2%; for P1 class carcasses - 67.1%; and the lowest meat yield can bee seen in P3 (64.3%), P4 (61.7%) un O3 (53.9%) class bovine animals carcasses. There is no distinctive relation for cattle of this category, showing higher conformation and lower fat cover class determine that higher meat yield.

The meat yield of E category cattle, comparing O and P conformation and fat cover class differs significantly. O2 (69.8%) and P1 (67.6%) class carcasses have the highest meat yield, O4, O5 and P4 class carcasses have the lowest meat yield, 59.1%, 56.9% and 58.1% respectively.

Analyzing this data, a question arises, if farmers should breed fatty bovine animals with better-developed muscles or leaner animals with lesser-developed muscles, since the meat result is similar.

Findings show that fat class has the single biggest effect on retail beef yield (%). These results conform with conclusions of Yeates and Gaden (1998) who in their research have proven that for every 1 mm increase in fat depth at the rib, the retail meat yield decreases by just over 1%. So we can affirm that fatter cattle tend to have a higher dressing percentage, but lower retail beef yield due to extra trimming.

The statistical indices for dressing percentage and meat yield are given in Table 3.

Table 3

The statistical indices for dressing percentage and meat yield of representative sample (n=118) of cattle carcasses, 2006

Statistical indices	Meat yield, %	Dressing, %
Average	74.73	50.37
Standard error	0.34	0.45
Standard deviation	3.73	4.90
Minimum	58.36	38.20
Maximum	82.04	62.38

Source: author's calculations

Important indicator analyzed here is meat yield ratio since it shows the saleable, i.e, valuable meat ratio to live weight. Knowing this indicator, it is possible to deduce, which types of cattle are more valuable to be bred. Figure 4 shows comparison of cattle indices (live and carcass weight; dressing and meat yield percentage) for different bovine animals categories.

AR2, AU1, CR2, AR1, un BO1 class cattle have the highest meat yield or meat yield ratio - from live weight - 47.2%, 45.7%, 43.9%, 41.7% and 40.4% respectively. Also AR3 (38.6%), AO1 (38.1%), AO2 (38.2%), BR3 (37.8%), BO3 (37.0%), CO2 (37.2%) and CO3 (38.2%) class bovine animals carcasses have comparatively high meat yield ratio.

However, the cattle classes: DO3 (24.7%), DP1 (26.7%). DP2 (27.2%), DP3 (28.2%) and DP4 (28.1%) have significantly lower meat yield ratio. Therefore it can be deduced that male bovine animals are more valuable, when breeding for obtaining beef.

Similar results are obtainined, calculating bovine carcasses market value. The market value shows how much money a producer of beef (slaughterhouse owner) can receive for beef cuts, obtained from cattle carcass. The various beef cuts are divided into 3 grades or quality groups:

- prime cuts - leg, sirloin, flank, tenderloin;
- second cuts - brisket, chunk, neck, shoulder;
- third cuts – trimming.

Comparing the average market values, B and C categories carcasses have the highest market value 755.7 and 635.2 EUR respectively per animal, whereas D and E category bovine animals' market value is much lower (Fig. 5).

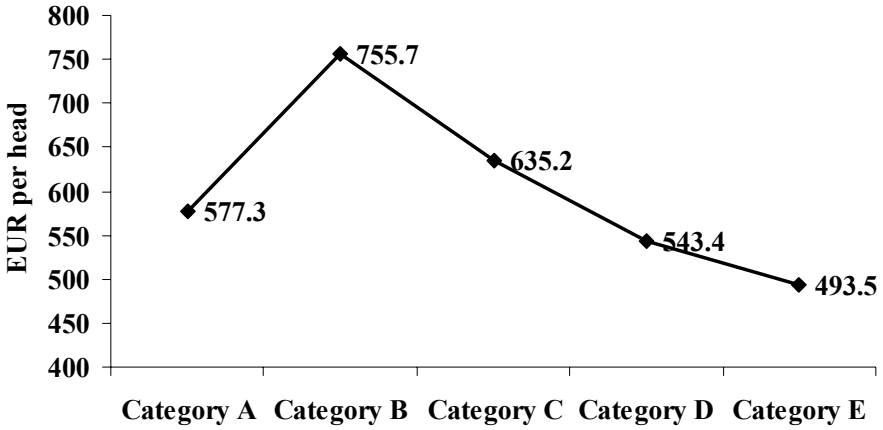

Figure 5. The comparison of market value (EUR/head) of different categories of cattle carcasses

Source: author's calculations

The purchase price of A category cattle carcasses, compared to other male carcasses, i.e., B and C categories, is relatively low – EUR 577.29 per animal; especially when realizing that A category carcass had essentially higher meat yield. That can be explained by the fact that A category cattle mostly included P conformation class with weak muscle development or conformation class, with market value lower than carcasses with better muscle development.

Analyzing market value by cattle carcasses conformation and fat cover classes, it can be concluded that AR1, BR3, BR4 class carcasses are the most valuable - EUR 1114.5, 1059.4 and 1092 relatively per carcass, whereas EP1 and EP2 class carcasses are of lower value; their market value is EUR 310.2 and 379.4 EUR/per carcass.

Conclusions

Latvian farmers deliver to slaughterhouses mainly young cattle A and E carcasses (bulls, younger than 2 years, and heifers), whose carcass weight does not exceed 180 kg, and medium heavy cattle with carcass weight between 200 and 300 kg, since farmers are breeding bulls for slaughter for a year or two, since, according to them, it is more profitable from economic point of view, but delivered animal's carcass weight is lower than necessary for carcass and beef market. D category or cow carcasses are the heaviest of all category carcasses - 65% of them weigh 200 to 300 kg, but 16% - more than 300 kg.

B and C category cattle carcasses have the highest dressing percentage, A and E categories have slightly lower and rather similar dressing percentage, whereas D category has the lowest dressing percentage. Another tendency is higher dressing percentage in fatter – 3, 4 and 5 fat cover classes – and more muscled - U, R and O conformation classes' - carcasses.

B and C category cattle carcasses have the highest meat yield, C category have slightly lower meat yield, but D and E categories carcasses have the lowest meat yield. Analyzing meat yield of every category by conformation and fat cover classes, a connection can be observed - leaner carcasses, i.e., with lower fat cover class have higher meat yield.

Male bovine animals (categories A, B and C) carcasses dressing percentage and meat yield is higher than for female animals (categories D and E) carcasses, besides higher dressing percentage is typical for higher– 3, 4 un 5 fat cover classes – and more muscled - U, R un O carcass conformation classes, while leaner carcasses, i.e., with lower fat cover class have higher meat yield.

Comparing the average market value, it can be observed that B and C categories of cattle carcasses have the highest value, EUR 755.7 and 635.2 per animal, while market value of D and E category cattle have considerably lower. The most valuable are AR1, BR3, BR4 class of cattle carcasses –114.5, 1059.4 and EUR 1092 respectively for carcass, while E category - EP1 and EP2 class carcasses are less valuable - their market value is 310.2 and 379.4 EUR/per carcass.

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MARKOVA ĶĒŽU MODEĻU PIELIETOŠANA ATBILSTĪBAS KONTROLEI LAUKSAIMNIECISKĀS PRODUKCIJAS APRITĒ

APPLICATION OF MARKOV CHAIN MODELS FOR ASSESSING CONFORMITY OF AGRICULTURAL PRODUCTS

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Abstract

Consumers want the fullest possible information about the food and agricultural products they buy. Identification, assessment and conformity control of agricultural products rules recognize that right. The rapid alert system for food and feed (RASFF) provides rapid information on newly identified risks to the consumer. When an EU government spots a food or feed item which it thinks could put consumers at risk, it uses this network to spread information on the potential risk and the action it has taken to stop the item entering the food chain. This ensures that the risk is publicized throughout the EU very quickly and that authorities in other countries can take swift action if they think their own citizens are also at risk. Consumers have an interest and right, to know what they are eating. The fundamental principle of EU agricultural products and food identification, assessment and conformity control rules is that consumers should be given all essential information on the composition of the product, the manufacturer, methods of storage and preparation. Today producers and manufacturers are free to provide additional information if they wish, but this must be accurate, not mislead the consumer and not claim that any foodstuff can prevent, treat or cure illness. The testing method and labeling results of agricultural products and food requirements are regularly updated to reflect advances in science and changing consumer expectations. Industry analysts expect that as regulations pertaining to testing of food and agricultural products continue to be adopted, the shift toward rapid-screening methods will continue.

The overall product testing industry is growing steadily. Present achievements do not offer wide possibilities for use of comparatively simple, safe and inexpensive methods for rapid alert identification system to express-control of different food products and raw materials in all stages of production and realization of agricultural products. Moreover, consumers and wholesalers do have neither measuring devices, nor relevant knowledge. It creates situation when consumers' health and wholesalers' business activities are in a certain risk situation. The authors analyze the possibilities for the application of A. Markov chain stochastic statistical-probability models (stochastic matrix) for the conformity assessing of agricultural products and consumers protection. At each time the system may have changed from the state it was in the moment before, or it may have stayed in the same state. The changes of state are called transitions. A series with the A. Markov property is such that the conditional probability distribution of the state in the future, given the state of the process currently and in the past, is the same distribution as one given only the current state. In other words, the past states carry no information about future states. On the basis of results of experimental researches of Markov and Bernulli models and modeling of intellect of the consumer we are developed of new rapid risk identification technology for the protection of interests and rights of consumers.

Key words: consumers' protection, intelligent technologies.

1. Ievads
1. Introduction

Riska analīze starptautiskajā praksē patlaban ieviesta ķīmiskajiem riska cēloņiem, tas ir, piesārņojumam. Pārtikas un lauksaimniecības organizācija (*Food and Agriculture Organization, FAO*) un Pasaules Veselības organizācija (*PVO*) šo pieredzi pārnes uz riska analīzi mikrobioloģiskajam riska cēloņiem. Uz riska analīzi ir balstīta pārtikas kontroles politikas un patērētāju aizsardzības pasākumu izstrāde (Špakoviča 2002...2006, Melece 2004, RASFF 2005). ES dalībvalstīs analizē paraugus, balstoties uz programmām, kuru ietvaros izstrādā ikgadējos plānus. Programma ietver augļu, dārzeņu, piena un piena produktu, gaļas un graudaugu paraugu ņemšanu un analizēšanu. Monitoringa rezultāti ir salīdzināmi ar citu valstu ziņotajiem rezultātiem un katru gadu tiek publicēti. Paraugu ņemšana galvenokārt notiek vairumtirdzniecības vai produkcijas iepirkšanas vietās. Graudaugu un to produktu paraugus ņem dzirnavās un mazumtirdzniecības vietās. Paraugu ņemšanai pārtikas produktus izvēlas pēc šādiem apsvērumiem: produktiem ir būtiska vieta iedzīvotāju uzturā jeb patēriņā; produkti, kuros iepriekš veiktajos monitoringos konstatētas pesticīdu atliekas. Veicot riska novērtēšanu, ES prasības pārtikas kontrolei un uzraudzībai ir formulētas regulās, direktīvās un lēmumos, kurus nosaka Eiropas Komisija (Špakoviča 2004...2006, RASFF 2005). Viens no riska analīzes komponentiem ir riska komunikācijas sistēma – RASFF (*Rapid Alert System for Food and Feed*), ES ātrās brīdināšanas sistēma.

Pētījums ietver principiāli jaunu atbilstības kontroles inteliģentās tehnoloģijas izstrādi, kam pamatā ir Markova ķēžu metodes izmantošana neatbilstības riska automatizētai analīzei, lai noteiktu preces, darbības vai tehnoloģiska procesa neatbilstību konkrētām prasībām vai darījumu ar preci neatbilstību attiecīgiem noteikumiem. Tas nozīmē, ka fiziski varēs pārbaudīt tikai to preci vai darījumu, kurā konstatē novirzi no prasībām vai noteikumiem. Tāpēc atbilstības kontrole ir savdabīgs instruments patērētāju aizsardzībai preču apritē. Īpašas problēmas, patērētājiem novērtējot produkcijas un preču kvalitāti, ir atbilstības kontroles rezultātu analīze un apstrāde, tas ir, skaitļošanas intelekts. Tāpēc patērētāja intelekta un to aizsardzības funkcijas uz sevi jāpārņem „domājošām mašīnām" (Špakoviča 2004, Москвин 2005).

Pētījuma mērķis ir atbilstības kontroles tehnoloģiju attīstība lauksaimnieciskās produkcijas apritē. Mērķa sasniegšanai pētījuma uzdevums ir izpētīt A. Markova ķēžu un Bernulli matemātisko modeļu iespējas lauksaimnieciskās produkcijas atbilstības kontroles uzdevumos un eksperimentāli pārbaudīt to pielietošanas efektivitāti.

2. Ātrās brīdināšanas sistēma (RASFF) kā patērētāju aizsardzības mehānisms
2. The RASFF as the Mechanism for the Consumers' Protection

Ātrās brīdināšanas sistēmas juridiskais pamats – Regula (EK) Nr. 178/2002. Ātrās pārtikas un dzīvnieku barības brīdināšanas sistēmas mērķis ir nodrošināt kontroles iestādes ar efektīvu mehānismu informācijas apmaiņai par pasākumiem, kas tiek veikti, lai nodrošinātu pārtikas drošību. Lai sekmētu informācijas tīklā iesaistīto dalībnieku darbu, informācija ir iedalīta divās atsevišķās grupās. *Brīdinājumi* tiek izsūtīti gadījumos, kad risku radošais pārtikas vai lopbarības produkts ir nonācis pārdošanā un ir nekavējoties nepieciešams veikt atbilstošus pasākumus. Brīdinājumu izdod tā dalībvalsts, kas atklājusi attiecīgo problēmu un veikusi attiecīgus pasākumus, piemēram, preces izņēmusi no apgrozījuma vai tās atsaukusi. Šādu paziņojumu mērķis ir sniegt visiem informācijas tīkla dalībniekiem informāciju, uz kuras pamata tās varētu pārbaudīt, vai attiecīgais produkts nav nonācis to tirgū, un vajadzības gadījumā veikt nepieciešamos pasākumus. Tiek uzskatīts, ka pateicoties šai sistēmai, patērētāji var būt droši, ka produkti, kas tiek minēti šāda veida brīdinājumos, tiks izņemti vai ir jau izņemti no apgrozības tirgū (Melece 2004). Tāpēc dalībvalstu rīcībā jābūt visiem vajadzīgajiem mehānismiem šādu pasākumu veikšanai, ieskaitot iespēju nepieciešamības gadījumā sniegt sīku bīstamo produktu aprakstu plašsaziņas līdzekļos. Pievēršam uzmanību: runa ir nevis par reālo patērētāju aizsardzību, bet gan tikai par bīstamo produktu aprakstu. *Informatīvi paziņojumi* attiecas uz pārtikas vai lopbarības produktu, kas gan rada zināmu risku, taču pārējiem informācijas tīkla dalībniekiem šādos gadījumos nav jāveic tūlītēji pasākumi, jo tiek uzskatīts, ka attiecīgais produkts nav nonācis to tirgos. Šāda veida paziņojumi galvenokārt attiecas uz pārtikas un lopbarības preču partijām, kas ir pārbaudītas uz ES ārējās robežas un atzītas par prasībām neatbilstošām. Tiek uzskatīts, ka pateicoties šai sistēmai, patērētāji var būt droši, ka produkti, kas tiek minēti šāda veida brīdinājumos, nav nonākuši tirgū vai arī ir veikti visi nepieciešamie drošības pasākumi. Formāli Eiropas Komisija publicē iknedēļas pārskatu par izdotajiem brīdinājumiem un informatīvajiem paziņojumiem. Tātad iznāk,

ka, pirms doties iepirkties lielveikalā, patērētājiem tiek rekomendēts izpētīt Eiropas Komisijas brīdinājumus, informatīvos paziņojumus un regulas. Reālos apstākļos mūsdienu patērētājs ir tik informatīvi pārslogots, ka viņš gluži vienkārši fiziski nav spējīgs pārstrādāt aizvien pieaugošas informācijas plūsmas. Tajā skaitā arī Eiropas Komisijas informatīvos materiālus un brīdinājumus. Regulā Nr. 178/2002 ir uzsvērts, ka nepieciešams saglabāt līdzsvaru starp informācijas atklātību un komercinformācijas aizsardzību. Tā sauktais „līdzsvars" starp informācijas atklātību un komercinformācijas aizsardzību – patiesi oriģināls ES ierēdņu „izgudrojums"! Jo runa te ir par „līdzsvaru" interešu antagonismā starp alkatīgajiem ražotājiem un nabadzīgajiem patērētājiem. Regulas ietvaros Eiropas Komisijas iesaka īstenot acumirklīgi – ar ātrās brīdināšanas sistēmas (*RASFF – Rapid Alert System for Food and Feed*) palīdzību. Tajā pašā laikā saskaņā ar Regulas 178/2002 rekomendācijām pat netiek publicēti preču zīmju nosaukumi un dati par tiem uzņēmumiem, kas ir „nogrēkojušies" pret patērētāju interesēm un viņu veselību. Tomēr, neņemot vērā iepriekš teikto, RASFF autori apgalvo, ka šāda kārtība neierobežo patērētāju tiesību aizsardzību, jo RASFF irtvaros publicētie paziņojumi ir garantija, ka atbilstoši atbildes pasākumi vai nu tiek gatavoti, vai arī jau ir veikti (RASFF 2005, Melece 2004). Apzinādamies RASFF sistēmas virtualitāti, tās autori uzsver, ka Eiropas Komisijai (EK) nav tiesību sniegt plašāku informāciju, kā vien izklāstīto. Bet vienlaikus Eiropas Komisija atzīst, ka cilvēka veselības aizsardzības nodrošināšanas nolūkos būtu nepieciešama lielāka atklātība un operativitāte, tāpēc rekomendē pēc iespējas drīzāk veikt visus nepieciešamos pasākumus, izmantojot plašsaziņas līdzekļus. Šā raksta autori piekrīt minētajai tēzei, jo vietējais patērētājs reģionālos apstākļos nevar gaidīt instrukcijas un norādījumus no Briseles, kad viņa veselību un dzīvību reāli apdraud vietējas izcelsmes riski vai vietējo ierēdņu paviršība dienesta pienākumu izpildē. Eiropas Komisijas atbilstošas struktūras parasti sniedz brīdinājumus un informatīvo paziņojumu izvilkumus, akcentējot tos gadījumus, kur izcelsmes valsts ir ES vai EFTA dalībvalsts. Bet, piemērām, arī Latvijā pastāv pieņēmums, ka ES valstu produktiem nav jāveic pārbaude, jo šo valstu attiecīgo institūciju izsniegtie sertifikāti visā pilnībā garantē pārtikas un lopbarības nekaitīgumu. Tātad no RASFF Regulas Nr. 178/2002 satura faktiski izriet, ka Latvijas institūcijām patērētāju interešu un tiesību aizsardzības jomā atveltīta pasīvā novērotāja un lēmumu izpildītāju loma, ignorējot gan reģionālās īpatnības, gan vietējos nosacījumus, gan lokālo specifiku. Kaut gan visām valstīm nav pietiekami zinātniskie resursi, iespējas vai dati, lai veiktu riska novērtēšanu, tiek uzskatīts, ka ne vienmēr nepieciešami vietējie dati, jo iespējams izmantot starptautiskos datus un ekspertīzi, kā arī citu valstu datus, ja tie iegūti ar starptautiski atzītām metodēm. Jaunattīstības valstīm FAO un PVO rekomendē sekmēt zinātnieku kadru sagatavošanu, kuri spētu interpretēt un novērtēt datus un kuru veikto novērtējumu varētu izmantot nacionālo pārtikas kontroles programmu izstrādei. Tādam patērētāju aizsardzības problēmas „risinājumam" šā raksta autori diemžēl piekrist nevar.

Tieši otrādi. Šā raksta autori uzskata, ka RASFF kā patērētāju aizsardzības sistēma nav nedz efektīva, nedz dzīvotspējīga, jo patērētāja jau bez tam informatīvi stipri pārslogoto intelektu būtu prātīgāk atbrīvot no „formulām, fabulām un regulām" un informācijas tehnoloģiju sasniegumu laikmetā risku analīzes un novērtēšanas funkcijas pilnīgi jāpārliek uz „domājošām mašīnām". Tieši šo apsvērumu dēļ Latvijas Lauksaimniecības universitātē ir izstrādātā patērētāju aizsardzības „inteliģentā" tehnoloģija balstās uz automātiskiem pārtikas un lauksaimnieciskās produkcijas testēšanas instrumentiem ar „mākslīgo" intelektu. Saprotams, ka tie ir jāapmāca, lai noteiktu neatbilstības pārtikas, lauksaimnieciskās un citu preču apritē. Šādi mērīšanas instrumenti ir intelektuāli interfeisi starp cilvēku un informatīvo vidi. Pēdējā ar saviem informācijas tehnoloģijas rīkiem nodrošina ātru riska novērtēšanu un nosaka nepieciešamās kontroles darbības preču apritē. Diemžēl informācijas tehnoloģijas bieži vien konfrontē ar cilvēkā fizioloģiskajām spējām uztvert un adekvāti reaģēt uz informācijas plūsmu stohastiskām dominantēm. Pagaidām vēl nav izstrādāti relatīvi vienkārši, droši un lēti pārtikas un lauksaimnieciskās produkcijas testēšanas mēraparāti. Veikalos, noliktavās, tirdzniecības bāzes un tā joprojām patērētājiem ir iespēja pašiem veikt atbilstības kontroli pēc produkta masas, bet kvalitātes atbilstības kontrole patērētājiem nav pieejama. Atbilstošu instrumentu trūkuma dēļ muitās veic galvenokārt nepārtikas preču un lauksaimnieciskās produkcijas atbilstības kontroli, bet norobežojas ar pavaddokumentu noformēšanas pareizības pārbaudi. Tāpēc galvenokārt pārbauda ne pašu tehnoloģiju, produktu vai preci, bet gan pavaddokumentus un rezultātā vietējais patērētājs pakļauts drošības riskam (Špakoviča, Moskvins 2002...2006). Pārtikas aprite ietver visus posmus, kurus iziet pārtika līdz patērēšanai (ieguve, piegāde, apstrāde, sagatavošana pārstrādei, pārstrāde, ražošana, iesaiņošana, uzglabāšana, pārkraušana, transportēšana, importēšana, eksportēšana, izplatīšana, ēdiena pagatavošana un citi posmi).

Patērētājam Latvijā ir jāapzinās, ka neviena valsts kontrolējoša vai uzraudzības institūcija neatrisinās viņa problēmas. Tikai paša patērētāja prasme izvēlēties un prasme aizstāvēt sevi gadījumos, kad tiek

pārkāptas viņa tiesības, palīdzēs veidot savstarpēji pieņemamas attiecības starp patērētāju un uzņēmēju, veicinās konkurences attīstību, kas ir ietekmīgs preču un pakalpojumu kvalitātes uzlabošanas stimuls.

Viena no iespējām aizstāvēt patērētājus pret negodīgiem ražotājiem un pret negodīgo konkurenci ir elektronisko testēšanas instrumentu izstrāde ar „mākslīgo" intelektu, izmantojot cilvēka māņu orgānu imitācijas principu. Testēšanas rezultātu apstrādei var izmantot dažādas datu apstrādes algoritmus ar nolūku sniegt patērētājam nevis neapstrādātas informācijas kopas, bet gan lietošanai gatavas zināšanas par konkrēta produkta atbilstību kvalitātes normām un drošības prasībām. Sakarā ar straujo datorzinātnes un informācijas tehnoloģiju attīstību, pasaulē tiek plaši izmantotas datorizētās tehnoloģijas, kā arī mākslīgā intelekta atbilstības kontroles principi, kas var principiāli uzlabot situāciju patērētāju aizsardzības jomā un lauksaimnieciskās produkcijas kvalitātes kontrolē. Atbilstības kontroles operatīvu pasākumu efektivitātes paaugstināšanai patērētājiem un ražotajiem jānodrošina neatkarīgas preventīvas kvalitātes un drošības kontroles iespēja, atbilstības kontrolei lietojot intelektuālos mikrotesterus. Šādas patērētāju aizsardzības ekspertu sistēmas, datortehnoloģijas un intelektuālie instrumenti ir jauns pakāpiens pasaules tehnoloģiskajā attīstībā un cilvēka drošības sistēmģenēzē.

3. Metodes
3. Methods

Pētījumā tika pielietota A. A. Markova ķēžu teorija un modeļi (Марков 1916, Ивченко и др. 1992). Testējamā produkta „etalona" (proves, bufera šķīduma, parauga) metriskā tēla noteikšanai pieņemsim, ka **A = { a, b, c, d, ... n } ∪{E}.** Apzīmēsim testējamā produkta mērījumu **j –** izlases fragmenta **i –** paraugus ar $\mathbf{g_{i,j}}$**.** Tad var uzskatīt, ka izlases fragments $\mathbf{g_{i,j}}$ ir paraugu metriskā tēla apzīmējumu (simbolu) secība, kas atbilst noteiktam produkta parauga metrisko parametru kompleksam **B**, kas iekļauj sevī produkta galvenās kvalimetriskās īpašības, piemēram, fizikāli ķīmiskais sastāvs, organoleptiskie rādītāji, oža, garša un tā tālāk, kuras parasti ir reglamentētās saskaņā ar apstiprinātām ražojamas produkcijas vai pārtikas kvalitātes normām un drošības standartiem.

Katru izlases fragmentu $\mathbf{g_{i,j} \in B^*}$ var interpretēt un iekļaut $\mathbf{A^*}$ ar noteiktas funkcijas $\mathbf{F: B^* \rightarrow A^*}$ palīdzību. Funkcija **F** var iekļaut sevī paraugu metriskā tēla parametru atbilstības kontroles, filtrācijas, ekstrapolācijas, produkta uzglabāšanas un realizācijas termiņa noteikšanas un citus operatorus. Pieņemsim, ka testējamo paraugu izlases fragments $\mathbf{y \in B^*}$ pieder vienam no **n** produkta „etaloniem", un mums nav iepriekš zināms, kādam tieši produkta etalonam. Atbilstības kontroles uzdevums ir noteikt testējamā parauga piederību izlases fragmentam **y.** Atbilstības kontroles uzdevumu mēģināsim atrisināt, pielietojot maksimālās ticamības kritērija novērtējumu **t(x)**

$$\mathbf{t(x) = argmin_{i = 0,...,n-1} L_i(x)}$$

Markova ķēdes realizācijai **x** ar pārejas matricu $\mathbf{P^i}$ secībai **x = F (y)** vai **x = G (y)** ar varbūtību $\mathbf{L_i}$ **(x).** Tādā veidā iegūstam divas atbilstības noteikšanas metodes: 1) paraugs – **t (F (y)),** 2) paraugs – **t (G (y))**. Te ir svarīgi uzsvērt, ka novērtējumi **t (F (y))** и **t (G (y))** tiek noteikti, pamatojoties uz paraugu galveno metrisko parametru mērījumu rezultātu atkārtojamības biežumu. Šeit novērtējumi **t (F (y))** un **t (G (y))** nav atkarīgi no informācijas iegūšanas secības par testējamo paraugu parametriem. Hipotēze par piedāvātā atbilstības kontroles principa piemērojamību noteiktai A. Markova ķēdes realizācijai paredz adekvāto eksperimentālo, analītisko un statistisko pārbaudi. Hipotēzes pārbaudei izmantojam novērtējumu $\mathbf{t(x) = argmin_{i = 0,...,n-1} L_i (x).}$ Atbilstības kontrolei tika pakļauti augļu un dārzeņu dažādu šķirņu paraugi un, pielietojot A. Markova ķēdes realizācijas metodi, tika eksperimentāli pārbaudīta novērtējuma **t(F(y))** efektivitāte.

4. Rezultāti un diskusija par A. Markova ķēžu modeļu pielietošanu lauksaimniecisko produktu atbilstības kontrolei
4. Results and discussion Application of Markov Chain Models for Assessing Conformity of Agricultural Products

Vispārīgā formā testējama produkta metriskais modelis var būt interpretēts ar atbilstības kontroles matemātiskiem modeļiem. Proti, pētījumu gaitā tika izstrādāti un aprobēti A. Markova ķēžu un Bernulli atbilstības

kontroles statistiskie modeļi. Stohastiskās matricas izpēte atbilstības kontroles uzdevumā pamatojas uz pārbaudāmā produkta parametru mērījumu kopas secības A. Markova ķēdes matemātiskā modeļa realizācijas.

Atbilstības kontroles eksperimentu gaitā tiek aprēķināta noteikta produkta kvalitātes „etalona" un faktiski iegūto produkta kvalitātes radītāju kritisko biežumu matrica. Tāda matrica tiek izveidota katram produkta paraugam. Turpmāk katram produktam tiek novērtēta kvalitātes parametru atbilstības varbūtība normām (paraugam, etalonam), tā sauktais neatbilstības risks.

Neatbilstības risks tiek uzskatīts par minimālu un produkta atbilstība normām ir maksimālā tam produkta paraugam, kam aprēķinātais novērtējuma varbūtības koeficients ir lielāks.

Apzīmēsim ar **A** noteikta produkta normējamo parametru kompleksam atbilstošu kodēto simbolu daudzumu. Ar $\mathbf{A_k}$ apzīmēsim daudzuma **A** to mērījumu kopas „ķēdes garumu" ar simbolu apjomu **k**, kas vislabāk kvalitatīvi raksturo testējamo produktu. Lai $\mathbf{A^* = \cup_{k>0} A_k}$. Apzīmēsim Markova ķēdes garumu $\mathbf{f \in A^*}$ ar $\mathbf{\lfloor f \rfloor}$. Tad atbilstības kontroles uzdevumu var noformulēt šādi. Pieņemsim, ka ir uzdotas **n** klases $\mathbf{C_i}$, kur $\mathbf{i = 0, ..., \tilde{n}1}$. Katrai klasei $\mathbf{C_i}$ pieder secību kopas $\mathbf{f_{i,j} \in A^*}$, kur $\mathbf{j = 1, ..., m_i}$, tas ir $\mathbf{C_i = \{ f_{i,j} \mid j = 1,\ldots,m_i \}}$. Atbilstības kontroles uzdevums ir noteikt piederību $\mathbf{x \in A^*}$ vienai no $\mathbf{C_i}$ klasēm. Pieņemsim, ka secību kopas $\mathbf{f_{i,j}}$ ir Markova ķēdes realizācijas ar pārejas matricu $\mathbf{P^i}$.

Izveidosim atbilstības kontroles novērtējuma pārejas matricu $\mathbf{P^i}$. Ar $\mathbf{h_{i,j,kl}}$ apzīmēsim kritisko pāreju $\mathbf{k \rightarrow l}$ daudzumu secību kopai $\mathbf{f_{i,j}}$, pieļaujot, ka $\mathbf{h_{i,kl} = \sum_j h_{i,j,kl}}$, bet $\mathbf{h_{i,k} = \sum_l h_{i,kl}}$ un $\mathbf{P^i_{kl} = h_{i,kl} / h_{i,k}}$. Pie tam pieļaujam, ka daži $\mathbf{P^i_{kl}}$ var būt vienādi ar nulli. Apzīmēsim ar $\mathbf{Z_i}$ tādu divu **(k,l)** sakārtoto pāru daudzumu, kad $\mathbf{P^i_{kl} > 0}$. Pieņemsim, ka **x** vienlaikus ir arī Markova ķēdes realizācija ar pārejas varbūtības matricu $\mathbf{P^\theta}$, kur θ – nezināmais parametrs diapazonā **1, ..., n**. Apzīmēsim ar $\nu_{k,l}$ pāreju skaitu $\mathbf{k \rightarrow l}$ uz **x** apgabalu. Lai arī $\mathbf{\nu_k = \sum_l \nu_{k,l}}$. Tad

$$\mathbf{L_i(x) = \tilde{} \sum_{(k,l)} \nu_{k,l} \times \ln(\nu_{k,l} / (P^i_{kl} \times \nu_k))},$$

kur summēšana notiek pēc pārim $\mathbf{(k,l) \in Z_i}$. Tātad $\mathbf{L_i(x)}$ atbilst varbūtības logaritmam **x** ar mīnuss zīmi, bet ar nosacījumu, ka **x** ir **A**. Markova ķēdes realizācija ar pārejas matricu $\mathbf{P^i}$. Nosauksim **t(x)** par maksimālās ticamības kritērija novērtējumu nezināmam parametram $\underset{\sim}{\theta}$ kur

$$\mathbf{t(x) = argmin_{i=0,\ldots,n-1} L_i(x).}$$

Atbilstības kontroles algoritmu efektivitātes salīdzināšanai izpētīsim Bernulli varbūtības statistisko modeli. Kā jau ir zināms, šīs statistiskais modelis izmantojams tad, kad gadījuma rakstura neatkarīgiem lielumiem ir piemērots vienāda sadalījuma likums. Atbilstības kontroles uzdevumā formāli pieļausim, ka secību kopas $\mathbf{f_{i,j}}$ un **x** atbilst šim nosacījumam. Turklāt pieņemsim, ka gadījuma rakstura neatkarīgie mērījumu lielumi pieder kopai **A**, bet **x** sadalījuma lielumi raksturojami kā piederoši atbilstības klasei η, kur η – iepriekš nezināmais lielums. Tad atbilstības novērtējuma Bernulli statistisko modeli var izteikt kā

$$\mathbf{e(x) = argmin_i G_i(x),}$$

kur

$$\mathbf{G_i(x) = \tilde{} \sum_k \nu_k \ln((\nu_k \times h_i)/(hi,k \times \nu))}.$$

Šeit summa $\sum$ tiek aprēķināta tādām **k** vērtībām, kad $\mathbf{\nu_k > 0}$, bet $\mathbf{\nu = \sum_k \nu_k}$, un $\mathbf{h_i = \sum_k h_{i,k}}$. Novērtējot $\mathbf{\eta(x)}$, tiek veikta noteikta produkcijas parauga parametru atkārtojamības (biežuma) statistiskā analīze un parametru atbilstības statistiskā kontrole. Hipotēzes pārbaudes eksperimentos tika izmantotas Markova ķēžu statistiskās analīzes metode un algoritmi. Eksperimenta mērķis bija noteikt testējamā produkta **i** – parauga atbilstību iepriekš uzdotai klasei ($\mathbf{i = 0,1,2,3}$) pēc viena testēšanas rezultāta novērtējuma $\mathbf{y^i}$, novērtēt A. Markova sastādītās matricas $\mathbf{P^i}$ pēc citu produktu paraugu datiem $\mathbf{f_{i,j}}$, un pēc tam noteikt $\mathbf{t(F(y^i))}$. Ja A. Markova metode darbosies adekvāti, tad katram **i** – produkta parauga atbilstības novērtējumam vajadzētu sakrist ar novērtējumu $\mathbf{t(F(y^i)) = i}$. Markova matricas izveidošanai vispārīgā formā izmantosim šādus testējamo parametru apzīmējumus:

[0 – paraugs] $(\mathbf{y^0})$; [1. metriskais parametrs] $(\mathbf{g_{0,1}})$; 2. metriskais parametrs $(\mathbf{g_{0,2}})$; 3. metriskais parametrs $(\mathbf{g_{0,3}})$; 4. metriskais parametrs $(\mathbf{g_{0,4}})$; 5. metriskais parametrs $(\mathbf{g_{0,5}})$; [6. metriskais parametrs] $(\mathbf{g_{0,6}})$; 7. metriskais parametrs $(\mathbf{g_{0,7}})$; 8. metriskais parametrs $(\mathbf{g_{0,8}})$; 9. metriskais parametrs $(\mathbf{g_{0,9}})$; 10. metriskais parametrs $(\mathbf{g_{0,10}})$; 11. metriskais parametrs $(\mathbf{g_{0,11}})$; 12. metriskais parametrs $(\mathbf{g_{0,12}})$; 13. metriskais parametrs $(\mathbf{g_{0,13}})$; 14. metriskais parametrs $(\mathbf{g_{0,14}})$; 15. metriskais parametrs $(\mathbf{g_{0,15}})$;

[1 – paraugs] $(\mathbf{y^1})$; [metriskais parametrs 1,1] $(\mathbf{g_{1,1}})$; [metriskais parametrs 1,2] $(\mathbf{g_{1,2}})$; metriskais parametrs 1,3 $(\mathbf{g_{1,3}})$; [metriskais parametrs 1,4] $(\mathbf{g_{1,4}})$; [metriskais parametrs 1,5] $(\mathbf{g_{1,5}})$; [metriskais parametrs 1,6] $(\mathbf{g_{1,6}})$; [metriskais parametrs 1,7] $(\mathbf{g_{1,7}})$; [metriskais parametrs 1,8] $(\mathbf{g_{1,8}})$; [metriskais parametrs 1,9] $(\mathbf{g_{1,9}})$; [metriskais parametrs 1,10] $(\mathbf{g_{1,10}})$;

[2 – paraugs] $(\mathbf{y^2})$; [metriskais parametrs 2,1] $(\mathbf{g_{2,1}})$; [metriskais parametrs 2,2] $(\mathbf{g_{2,2}})$; [metriskais parametrs] $(\mathbf{g_{2,3}})$;

[3 – paraugs] $(\mathbf{y^3})$; [metriskais parametrs 3,1] $(\mathbf{g_{3,1}})$; [metriskais parametrs 3,2] $(\mathbf{g_{3,2}})$; [metriskais parametrs 3,3] $(\mathbf{g_{3,3}})$; [metriskais parametrs 3,4] $(\mathbf{g_{3,4}})$; [metriskais parametrs 3,5] $(\mathbf{g_{3,5}})$. Ja, piemēram, par **1–** parauga etalonu pieņemts $\mathbf{y^1}$, tad visi pārējie paraugi tiek izmantoti matricas $\mathbf{P^i}$ aprēķināšanai . Aprēķinu rezultātus izvietojam 1. tabulā.

1. tabula
Table 1

A. Markova matricas aprēķinu rezultāti
The results of calculation the Markov' matrix

Nr.	Nosaukums	c_1	c_2	c_3	c_4
0	[0 – paraugs]	0	3	2325	612
1	[1 – paraugs]	0	2	1633	418
2	[2 – paraugs]	0	2	1112	396
3	[3 – paraugs]	0	2	962	381

1. tabulā stabiņu ailēs $\mathbf{c_1}$ – atbilstības kontroles rezultāti (0 – konstatēta parauga atbilstība); $\mathbf{c_2}$ – kopējais to failu skaits, kuri satur parauga kodētos aprioros datus; $\mathbf{c_3}$ ailes satur parauga to kodēto metrisko simbolu kopējo skaitu, kuri pieder $\mathbf{F\ (g_{i,j})}$, tas ir, $\mathbf{c_3 = \sum_j \left| F\ (g_{i,j}) \right|}$. Aile $\mathbf{c_4}$ satur to kodēto metrisko simbolu skaitu, kuri pieder $\mathbf{F\ (y^i)}$, tas ir $\mathbf{c_4 = \left| F\ (y^i) \right|}$. Tabulas stabiņa $\mathbf{c_1}$, **j –** rindiņā atrodas skaitļa $\mathbf{L_j\ (F\ (y^j))}$ rangs, kurš atrodas starp skaitļiem $\mathbf{\{\ L_i\ (F\ (y^j))\ \left| i = 0,1,2,3\ \right\}}$. Ar terminu „rangs" saprotam numuru $\mathbf{L_j\ (F\ (y^j))}$ starp skaitļiem $\mathbf{\{L_i\ (F\ (y^j))\ \left|\ i = 0,1,2,3\right\}}$, kas ir sakārtoti nepieaugšanas kārtībā.

Piemērām, ja $\mathbf{j = 1}$ un $\mathbf{L_i}$ izvietotas secībā $\mathbf{L_0 \le L_3 \le L_2 \le L_1}$, tad par rangu $\mathbf{L_1}$ būs numurs **3.** Bet ja $\mathbf{j = 0}$ un $\mathbf{L_i}$ izvietojas līdzīgā secībā $\mathbf{L_0 \le L_3 \le L_2 \le L_1}$, tad par rangu $\mathbf{L_0}$ kļūs numurs **0**. Rangs $\mathbf{L_j\ (F\ (y^j))}$, starp skaitļiem $\mathbf{\{L_i(F(\ y^j)\ |\ i = 0,1,2,3\}}$ sakrīt ar rangu $\mathbf{L_j\ (F\ (y^j))\ /\ \left|\ F\ (\ y^j)\ \right|}$, starp skaitļiem $\mathbf{\{\ L_i(\ F(\ y^j))\ /\ \left|\ F\ (\ y^j)\ \right|}$, $\mathbf{i = 0,1,2,3\ \}}$. Izvietosim matricas rindiņās $\mathbf{j = 0,1,2,3}$ pa 4 skaitļiem katrā $\mathbf{L_j\ (F\ (y^j))\ /\ \left|\ F\ (\ y^j)\ \right|}$, $\mathbf{i = 0,1,2,3}$:

$$\mathbf{L} = \begin{pmatrix} 2.412346 & 2.507465 & 2.4808653 & 2.4476736 \\ 2.493173 & 2.477468 & 2.5136458 & 2.4812874 \\ 2.499033 & 2.504508 & 2.4754778 & 2.4861542 \\ 2.530487 & 2.522861 & 2.5396557 & 2.5167367 \end{pmatrix}.$$

Katrā rindiņā noteiksim skaitļu $\mathbf{L_i}$ rangus:

$$\mathbf{R} = \begin{pmatrix} \mathbf{0} & 3 & 2 & 1 \\ 2 & \mathbf{0} & 3 & 1 \\ 2 & 3 & \mathbf{0} & 1 \\ 2 & 1 & 3 & \mathbf{0} \end{pmatrix}.$$

Meklējamie stabiņa $\mathbf{c_1}$ skaitļi atrodas uz matricas diagonāles. Saskaņā ar $\mathbf{t(x) = argmin}_{\,i=0,\ldots,n-1}\ \mathbf{L_i(x)}$ varam secināt, ka $\mathbf{t\,(F\,(\,y^j)) = j}$ tad un tikai tad, kad rangs $\mathbf{L_j\,(F\,(y^j\,)) / \left|\,F\,(\,y^j)\,\right|}$ starp skaitļiem $\mathbf{\{\,L_i\,(\,F\,(\,y^j)) / \left|\,F\,(\,y^j)\,\right|,\ i = 0,1,2,3\,\}}$ ir vienāds ar **0**. Tātad, ja kaut kādā rindiņā 1. tabulas stabiņā $\mathbf{c_1}$ paradās **0,** tad atbilstības kontroles paraugs ir sekmīgi identificēts. No 1. tabulas ir redzams, ka visiem produktu kontroles paraugiem ir konstatēta atbilstība.

Ja parauga testēšanas rezultātā atbilstība nav konstatēta, tas ir, $\mathbf{t\,(F\,(y^j)) \neq j}$, tad ir iespēja noskaidrot, cik tuvu testējamais paraugs ir atbilstības etalonam. Neatbilstības pakāpes noteikšana ir arī visai lietderīga informācija gan riska novērtēšanai, gan arī iestatot testera atmiņā pārtikas produkta ieteicamo realizācijas termiņu. Ja rangs $\mathbf{L_j\,(F\,(y^j)) / \left|\,F\,(\,y^j)\,\right|}$ starp skaitļiem $\mathbf{\{\,L_i\,(F\,(\,y^j)) / \left|\,F\,(\,y^j)\,\right|,\ i = 0,1,2,3\,\}}$ ir vienāds ar **1**, tad tas nozīme, ka produkta īpašības atšķiras no etalona tikai par vienu rangu. To var saistīt ar produkta cenu un šķiru (**I** vai **II**). Vienlaikus šāds produkta testēšanas rezultāts dod pamatu uzskatīt, ka testējamā parauga atbilstība konkrētajā gadījumā ir tuvāka etalonam, nekā rangam $\mathbf{L_j\,(F\,(y^j)) / \left|\,F\,(\,y^j)\,\right|}$, kas ir vienāds ar **3**. **R–** stohastiskās matricas pozitīva īpašība ir arī tas, ka šī matrica ļauj papildus lietderīgi interpretēt iegūtos modelēšanas rezultātus. Tātad ikviena testējamā bioloģiskā sistēma raksturojama ne tikai ar fizisko un ķīmisko aprakstu, bet arī modelējama kā informāciju saturoša struktūra. A. Markova ķēžu modeļi atbilstības kontroles uzdevumos darbojas apmierinoši, tie ir vienkārši pielietošanā, bet kā gandrīz vai visi statistiskie modeļi modelēšanas rezultātu precizitāti ietekmē apmācošas izlases apjoms. Statistisko eksperimentu rezultāti ļauj secināt, ka atbilstības novērtējuma kritērijs **e(x)** nav efektīvāks par kritēriju **t(x)**. Eksperimentālo statistisko pētījumu rezultāti apliecināja A. Markova ķēžu matemātiskā modeļa priekšrocības salīdzinājumā ar Bernulli metodi, jo A. Markova modelis satur daudz vairāk parametru. Statistiskās modelēšanas eksperiments apliecināja izvirzīto hipotēzi, jo eksperimentos no katriem 100 augļu un dārzeņu paraugiem viennozīmīgi tika identificēti atbilstoši 88 un 93 paraugi.

5. Secinājumi
5. Conclusions

1. Patērētājam Latvijā ir jāapzinās, ka neviena valsts kontrolējoša vai uzraudzības institūcija neatrisinās viņa problēmas. Tikai paša patērētāja prasme aizstāvēt sevi palīdzēs veidot savstarpēji pieņemamas attiecības starp patērētāju, ražotāju un uzņēmēju.
2. RASFF (*Rapid Alert System for Food and Feed*) – ātrās brīdināšanas sistēmu atbilstoši Latvijas apstākļiem nevar uzskatīt par drošu patērētāju aizsardzības instrumentu, jo tā ignorē patērētāju aizsardzības problēmas reģionālās īpatnības un nosacījumus.
3. Pārtikas produkti visvairāk ietekmē cilvēku dzīvību un veselību, tāpēc īpašu uzmanību nepieciešams pievērst likumu un citu normatīvo aktu pilnveidošanai patērētāju aizsardzībai reģionālā līmenī un normatīvajiem dokumentiem, kuri attiecas uz pārtikas apriti un patērētāju aizsardzību.
4. Jebkura bioloģiskā sistēma raksturojama ne tikai ar bioloģisko, fizisko un ķīmisko parametru aprakstu, bet modelējama arī kā informāciju saturoša struktūra.
5. Pētījumu rezultāti apliecināja A. Markova ķēžu matemātisko modeļu efektivitāti lauksaimnieciskās produkcijas atbilstības kontroles uzdevumos.
6. Testēšanas laboratorijas balstās uz sasniegto zinātnes un tehnikas līmeni. Tāpēc pētījumi atbilstības kontroles metožu un instrumentu izstrādei un pilnveidošanai patērētāju aizsardzībai reģionālā līmenī nepieciešams paplašināt un intensificēt.
7. Patērētāju interešu un tiesību aizsardzībai plašāk jāpielieto mākslīgā intelekta principi, intelektuālās tehnoloģijas un instrumenti. Patērētāju informatīvi pārslogotais intelekts ir jāatbrīvo no „formulām un regulām", tāpēc riska novērtēšanas funkcijas nepieciešams pilnīgi pārlikt uz „domājošām mašīnām".

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LAUKSAIMNIECĪBAS PAKALPOJUMU KOOPERATĪVO SABIEDRĪBU ATTĪSTĪBA LATVIJĀ

AGRICULTURAL SERVICES CO-OPERATIVE SOCIETIES DEVELOPMENT IN LATVIA

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Abstract

The present paper describes the dynamics of the foundation and performance of agricultural services co-operative societies and their legal basis in last five years. The author analyzes the state subsidy support programme and its influence on the foundation and activities of agricultural cooperative societies. The relevance of information produced by financial management and accounting for creating a realistic and clear view of financial result and performance of co-operative societies has been evaluated. The foundation and development of co-operative societies in recent years was caused by strengthening of farms and other producers connected with agriculture. This created the pre-requisites for the cooperation of producers with the purpose of gaining profitable sales, production facilities with discounts in prices or more convenient terms for taking loans. The state subsidies support was important as a financial source for covering overhead costs and purchase of equipment. The conclusion can be drawn that financial management and accounting satisfies the requirements that are necessary for the creation of realistic and clear view of financial results and performance of co-operative societies.

Atslēgas vārdi: lauksaimniecības pakalpojumu kooperatīvās sabiedrības, atzīšana, kooperatīvās sabiedrības apgrozījums, pārpalikums, pamatkapitāls, pamata un papildu paja.

Ievads
Introduction

Kooperatīvā sabiedrība ir brīvprātīga fizisko un juridisko personu apvienība, kuras mērķis – sniegt pakalpojumus tās biedru saimnieciskās darbības efektivitātes paaugstināšanai.

2001. gadā Latvijas Republikas Uzņēmumu reģistrā bija reģistrētas 1409 kooperatīvās sabiedrības, kuru darbības profils bija lauksaimniecība. Veicot šo sabiedrību apsekošanu, tika konstatēts, ka no tām darbojas tikai 574 (Lauksaimniecības gada ziņojums par 2001. gadu). Lielais kooperatīvu skaits bija izveidojies sakarā ar kolhozu un sovhozu privatizācijas nosacījumiem, jo, piemēram, graudu kaltes, mehāniskās darbnīcas un citus servisa rakstura objektus varēja privatizēt tikai kooperatīvās sabiedrības. Piensaimnieku kooperatīvo sabiedrību veidošanos noteica piena pārstrādes uzņēmumu privatizācijas noteikumi. Pēc šo objektu privatizācijas sakarā ar laukos notikušajiem pārveidojumiem saimnieciskās darbības formās daudzi no šiem kooperatīviem bija spiesti darbību pārtraukt.

Pēc kolhozu un sovhozu likvidācijas par galvenajiem lauksaimniecības produkcijas ražotājiem kļuva nelielas paju sabiedrības, sabiedrības ar ierobežotu atbildību, zemnieku un piemājas saimniecības. To attīstības aktualitāte bija produkcijas noieta nodrošināšana. Šīs problēmas viens no risinājumiem ir kooperācija, kas nodrošina lauksaimniekiem iespējas ietekmēt tirgu, kopīgi realizējot pašu saražoto produkciju, tādā veidā nodrošinot izdevīgākus nosacījumus produkcijas realizācijai un ienākumiem. Kooperatīvam ir iespēja panākt vienošanos ar pārstrādātājiem par zemniekiem izdevīgākām cenām, kas savukārt nav iespējams, zemniekam darbojoties katram atsevišķi. Te darbojas viens no ekonomikas principiem, pārdodot vairumā – cena augstāka, pērkot vairumā – iespējams saņemt atlaides.

Līdz ar to aktualitāti ieguva Lauksaimniecības pakalpojumu kooperatīvās sabiedrības, kas nenodarbojas ar lauksaimniecības produkcijas ražošanu, bet sniedz pakalpojumus lauksaimniecības produkcijas ražotājiem.

Hipotēze. Kooperācijas attīstību laukos pēdējos piecos gados veicināja mērķtiecīgs valsts subsīdiju atbalsts.

Pētījuma mērķis. Noskaidrot lauksaimniecības pakalpojumu kooperatīvo sabiedrību sekmīgas darbības un attīstības priekšnosacījumus.

Pētījuma mērķa sasniegšanai tika izvirzīti šādi uzdevumi:

1) analizēt kooperatīvo sabiedrību darbības tiesiskā regulējuma attīstību;
2) pētīt valsts subsīdiju atbalsta ietekmi uz kooperatīvu dibināšanu un darbību;
3) novērtēt finanšu vadības un grāmatvedības sniegtās informācijas atbilstību patiesa un skaidra priekšstata iegūšanai par kooperatīvo sabiedrību finansiālo stāvokli un darbības rezultātiem.

Izziņas avoti. Latvijas Republikas likumi un Ministru kabineta noteikumi, Zemkopības ministrijas izdotie subsīdiju piešķiršanas noteikumi un Lauksaimniecības gada ziņojumi no 2001. gada līdz 2006. gadam, Lauksaimniecības kooperatīvu asociācijas un atsevišķu kooperatīvo sabiedrību sniegtā informācija.

Pētījuma metodes. Statistiskās analīzes un salīdzinājumu, monogrāfiskā, loģiski konstruktīvā.

Rezultāti
Results

Kooperatīvo sabiedrību darbību tiesiski regulē Kooperatīvo sabiedrību likums.

Lauksaimniecības pakalpojumu kooperatīvo sabiedrību dibināšanu un attīstību veicināja 2002. gadā veiktie grozījumi kooperatīvo sabiedrību likumā. Tie radīja likumīgu pamatu Lauksaimniecības pakalpojumu kooperatīvo sabiedrību darbībai Latvijā atbilstoši Eiropas Savienības kooperatīvo sabiedrību tiesību principiem, tas ir, definēja lauksaimnieku neražojošās kooperatīvās sabiedrības, izņemot pirmapstrādi, un panāca, ka šāda veida kooperatīvās sabiedrības nemaksā uzņēmuma ienākuma nodokli, kā arī reglamentēja lauksaimnieku kooperatīvu sabiedrību biedru izstāšanās un izslēgšanas kārtību, pārpalikuma izmaksu, biedru ieguldījumu kārtību kooperatīva darbības nodrošināšanai.

2002. gadā veiktie grozījumi kooperatīvo sabiedrību likumā definēja jaunu kooperatīvo sabiedrību veidu – lauksaimniecības pakalpojumu kooperatīvās sabiedrības, ar dažām atšķirībām darbības nosacījumos salīdzinājumā ar citām kooperatīvajām sabiedrībām.

Lauksaimniecības pakalpojumu kooperatīvā sabiedrība (turpmāk tekstā – LPKS) ir kooperatīvā sabiedrība, kas sniedz pakalpojumus lauksaimniecības produktu ražotājiem, bet nenodarbojas ar lauksaimniecības produktu ražošanu. Pakalpojumi kooperatīvās sabiedrības biedriem ir darbi, kurus kooperatīvā sabiedrība izpildījusi pēc savu biedru pasūtījuma, kā arī preču apgrozījums starp kooperatīvo sabiedrību un tās biedriem. Par pakalpojumiem izmaksātās summas pārsniegumu par faktiskajām pakalpojumu izmaksām LPKS sauc nevis par peļņu, bet gan par pārpalikumu. Pārpalikuma daļu par pārskata periodu LPKS statūtos noteiktajā kārtībā izmaksā sabiedrības biedriem atbilstoši viņu izmantoto kooperatīvās sabiedrības pakalpojumu apjomam.

LPKS jeb ES izpratnē ražotāju grupu darbības mērķi ir iespējas tās biedriem uz sadarbības principiem realizēt savā saimniecībā saražoto produkciju, atbalstīt savus biedrus efektīvā ražošanas procesa nodrošināšanā, produkcijas realizācijas sagatavošanā (pirmapstrāde, fasēšana, pārstrāde u.c.) un realizācijas procesā, tādā veidā samazinot izmaksas gan preču ražošanas procesā, gan tās nogādāšanā līdz patērētājam. Savukārt LPKS biedriem nepieciešams nodrošināt produkcijas piegādi tirgus prasībām atbilstošā kvalitātē un apjomā.

LPKS nav komersants un, ievērojot nodokļu likumos noteikto kārtību, patstāvīgi nemaksā uzņēmuma ienākuma nodokli. Ienākuma nodokļu maksātāji ir LPKS biedri – par saņemto pārpalikumu.

Dokumentus, kas iesniedzami Uzņēmumu reģistram, lai reģistrētu LPKS, kā arī šīs sabiedrības atzīšanas kārtību nosaka 2003. gada 17. jūnija Ministru Kabineta noteikumi Nr. 328 „Noteikumi par lauksaimniecības pakalpojumu kooperatīvās sabiedrības reģistrācijai nepieciešamajiem dokumentiem un šīs sabiedrības atzīšanas kārtība".

Reģistrējot LPKS, reģistrācijas pieteikumā obligāti jānorāda, ka sabiedrība ir lauksaimniecības pakalpojumu kooperatīvā sabiedrība, ka tā neražo lauksaimniecības produktus (var pārstrādāt sabiedrības biedru saražoto produkciju) un sniedz pakalpojumus sabiedrības biedriem.

Reģistrētajām LPKS katru gadu ir jābūt atzītām šo sabiedrību statusā. Atzīšanu veic Latvijas Republikas Zemkopības ministrijas izveidota komisija piecu cilvēku sastāvā. Komisijā iekļauj pa vienam Lauku atbalsta dienesta, Valsts ieņēmuma dienesta un Latvijas Lauksaimniecības kooperatīvu asociācijas pārstāvim un divus Zemkopības ministrijas pārstāvjus.

LPKS, kas vēlās būt atzītas, katru gadu līdz 15. martam iesniedz Lauku atbalsta dienestā šādus dokumentus:

1) Zemkopības ministrijas apstiprinātu atzīšanas pieteikumu;
2) reģistrācijas apliecības Uzņēmumu reģistrā kopiju;
3) sabiedrības biedru sarakstu, kurā norāda apgrozījumu starp sabiedrību un tās biedriem;
4) informāciju par pārpalikumu.

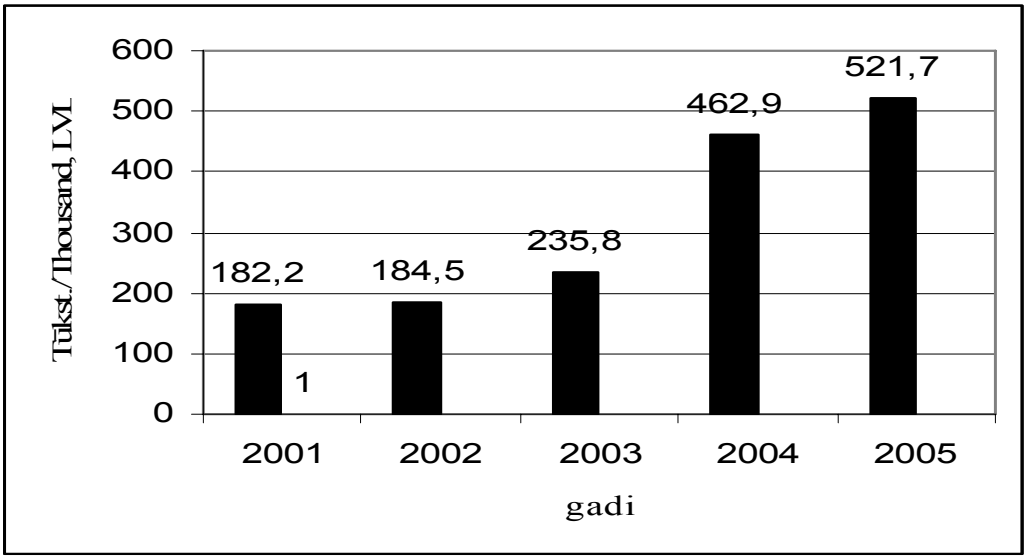
Lai atzītu sabiedrības atbilstību LPKS statusam, komisija vērtē iepriekšējā gada saimnieciskās darbības rādītājus saskaņā ar šādiem kritērijiem:

1) sabiedrības biedri ar tās starpniecību realizē tikai savā saimniecībā saražoto lauksaimniecības produkciju;
2) minimālais apgrozījums starp sabiedrību un sabiedrības biedriem ir 5000 latu;
3) minimālais apgrozījums starp sabiedrību un sabiedrības biedriem nav mazāks par 75% no sabiedrības kopējā apgrozījuma;
4) pārpalikuma sadale sabiedrības biedriem tiek veikta proporcionāli sabiedrības biedriem sniegto pakalpojumu apjomam;
5) vismaz 25% no pārpalikuma līdzekļiem tiek ieguldīti sabiedrības attīstībā.

Pēc tam, kad komisija izvērtējusi sabiedrību saskaņā ar iepriekšējā rindkopā minētajiem kritērijiem un pieņēmusi attiecīgu lēmumu, Zemkopības ministrija līdz 15. aprīlim sniedz rakstisku atbildi sabiedrībai par tās atzīšanu vai atteikumu atzīt sabiedrību, kā arī atzīto sabiedrību sarakstu līdz 15. aprīlim iesniedz Uzņēmumu reģistrā (elektroniskā veidā un rakstiski). Savukārt Uzņēmumu reģistrs par atzītajām sabiedrībām katru gadu līdz 30. aprīlim sniedz informāciju Valsts ieņēmumu dienestam.

Lai uzlabotu lauksaimniecības pakalpojumu kooperatīvo sabiedrību attīstību un veicinātu to aktivitāti sākot ar 2001. gadu to darbība tika subsidēta. Sākot ar 2004. gadu, papildus nacionālajām subsīdijām lauksaimniecības pakalpojumu kooperatīvajām sabiedrībām ir paredzēts arī ES atbalsts Lauku attīstības plāna 9.4. pasākums „Atbalsts ražotāju grupām".

Latvijas Republikas atbalsts kooperācijas attīstībai tūkst. latos parādīts 1. attēlā.



1. attēls. **Valsts atbalsts kooperācijas attīstībai tūkst. latos 2001. – 2005. gadā**
Figure 1. State support development of cooperation in 2001 – 2005

Avots: ZM dati no Lauksaimniecības gada ziņojuma par 2005 gadu.

Kā redzams 1. attēlā, tad valsts atbalsts subsīdiju veidā lauksaimniecības pakalpojumu kooperatīvajām sabiedrībām 2005. gadā salīdzinājumā ar 2001. gadu ir pieaudzis 2,8 reizes. Tas izskaidrojams ar lauksaimniecības pakalpojuma kooperatīvo sabiedrību skaita un atzīto lauksaimniecības pakalpojumu kooperatīvu skaita palielinājumu, kurām, sākot no 2003. gada, ir tikai tiesības uz atbalstu.

Zemkopības ministrija, saskaņā ar 2003. gada 17. jūnijā pieņemtajiem Ministru kabineta "Noteikumiem par lauksaimniecības pakalpojumu kooperatīvās sabiedrības reģistrācijai nepieciešamajiem dokumentiem un šīs sabiedrības atzīšanas kārtību" 2004. gada 14. aprīlī no aptuveni 60 izvērtētajām kooperatīvajām sabiedrībām pēc to 2003. gada darbības rezultātiem pozitīvu vērtējumu deva 29 kooperatīvām sabiedrībām. 2005. gadā, vērtējot lauksaimniecības pakalpojumu kooperatīvās sabiedrības pēc 2004. gada darbības rezultātiem, pozitīvu vērtējumu saņēma 45 kooperatīvās sabiedrības, bet 2006. gadā pēc 2005. gada kooperatīvo sabiedrību darbības rezultātiem, atzītas tika 54 kooperatīvās sabiedrības (Lauksaimniecības gada ziņojumi, 2003, 2004, 2005).

Atbalsta politikas attīstība lauksaimniecības pakalpojumu kooperatīvajām sabiedrībām un grozījumi kooperatīvo sabiedrību likumā veicināja esošo kooperatīvo sabiedrību pārreģistrāciju par lauksaimniecības pakalpojumu kooperatīvām sabiedrībām un arī jaunu lauksaimniecību pakalpojumu kooperatīvo sabiedrību dibināšanu. Laika periodā no 2003. gada 1. aprīļa līdz 2004. gada 1. aprīlim tika reģistrētas 27 lauksaimniecības pakalpojumu kooperatīvās sabiedrības. To veicināja vienreizējs subsīdiju atbalsts jaunajām kooperatīvajām sabiedrībām – 3000 latu katrai.

1. tabula
Table 1

Lauksaimniecības pakalpojumu kooperatīvo sabiedrību skaits un sadalījums pa darbības nozarēm
Number of agricultural services co-operative and distribution of co-operative societies among sectors

Kooperatīvo sabiedrību veidi Form of co-operative societies	**2004**	**2005**	**2006**
Graudu/Crops	25	29	29
Piens/Milk	27	28	19
Dārzeņi un augļi/Vegetable and Fruit	10	10	15
Gaļas/Meat	5	5	5
Lauksaimniecības pakalpojumi/Agricultural services	3	5	5
Medus/ Honey	2	1	1
Kopā/Total	72	78	74
Tajā skaitā atzītās kooperatīvās sabiedrības – Int.al. Accredited cooperative societies – skaits/number īpatsvars %/proportion %	29 40	45 58	54 73

Avots: Lauksaimniecības pakalpojumu kooperatīvo sabiedrību asociācijas dati.

1. tabulā sniegtie dati liecina, ka darbojošos lauksaimniecības pakalpojumu kooperatīvu skaits pēdējo trīs gadu laikā ir robežas no 70 līdz 80 kooperatīviem. Samazinās piena ražotāju kooperatīvu skaits un palielinās augļu un dārzeņu ražotāju kooperatīvi. Šis fakts izskaidrojams ar to, ka laukos piemājas saimniecībās samazinās govju skaits vai daļa vispār pārtrauc piena ražošanu pārdošanai sakarā ar izmaiņām pārdodamā piena kvalitātē. Savukārt sakarā ar lielveikalu pieprasījumu pēc nepārtrauktām vietējo augļu un dārzeņu piegādēm lielos daudzumos, labā kvalitātē, noteiktos fasējumos un pieprasītā sortimentā, atsevišķie augļu un dārzeņu ražotāji savu produkciju var realizēt tikai kooperējoties. 2004. un 2005. gadā jaundibinātajām augļu un dārzeņu ražotāju lauksaimniecības pakalpojumu kooperatīvām sabiedrībām sākotnējās atzīšanas veicināšanai katru gadu bija paredzēts subsīdiju atbalsts 26 tūkst. latu.

Lauksaimniecības pakalpojumu kooperatīvo sabiedrību darbības un dibināšanas valsts atbalsts veicināja arī atzīto kooperatīvo sabiedrību īpatsvara palielināšanos no 40% – 2004. gadā līdz 73% – 2006. gadā. Par 2005. gada saimnieciskās darbības rādītājiem 2006. gadā atzīto lauksaimniecības pakalpojumu kooperatīvo sabiedrību biedru skaits bija 2533, kopējais apgrozījums 56,4 milj. latu, tajā skaitā apgrozījums starp kooperatīviem un to biedriem bija 47.6 milj. latu vai 84 procenti. No 54 atzītajām sabiedrībām 44 sa-

biedrību darbības rezultāts bija pārpalikums kopējā summā 1 milj. latu, ko sabiedrības pārsvarā paredzējušas ieguldīt attīstībai.

Salīdzinot 2006. gadā atzīto kooperatīvo sabiedrību saimnieciskās darbības rādītājus par 2005. gadu ar 2005. gadā atzīto kooperatīvo sabiedrību 2004. gada rādītājiem, apgrozījums starp sabiedrībām un tās biedriem ir palielinājies 1,5 reizes. Uzlabojušies arī saimnieciskās darbības rezultāti. Ja 2005. gadā no 45 atzītajām sabiedrībām zaudējumi bija 20 sabiedrībās ar kopējo summu 84 tūkstoši lati, tad, noslēdzot 2005. gadu, no 54 atzītajām sabiedrībām zaudējumi bija tikai 10 sabiedrībām – kopsummā 25 tūkst lati.

Jaunu lauksaimniecības pakalpojumu kooperatīvo sabiedrību sākotnējās atzīšanas veicināšanai, sākot ar 2003. gadu ir paredzēts valsts subsīdiju atbalsts jaunajiem kooperatīviem nodibināšanas gadā darbības uzsākšanai. 2003., 2004. un 2006. gadā tie bija 3000 lati, un 2005. gadā 5000 lati katram kooperatīvam.

Sākot ar 2004. gadu, lai nodrošinātu plašākas sadarbības iespējas un finansiālā atbalsta pieejamību lauksaimniecības pakalpojumu kooperatīvām sabiedrībām, kas darbojas aktīvi, Latvijas lauku attīstības plānā Lauku attīstības programmas īstenošanai 2004. – 2006. paredzēts atzītajām lauksaimniecības pakalpojumu kooperatīvām sabiedrībām piešķirt atbalstu to darbības nodrošināšanai un vadībai. Atbalsts tiek noteikts pēc vienotas likmes atkarībā no ražotāju grupas biedru ikgadējā pārdotās produkcijas apjoma.

Atbalstu atzītajām lauksaimniecības pakalpojumu kooperatīvām sabiedrībām aprēķina kā noteiktu procentu no kooperatīva biedru ikgadējās pārdotās produkcijas vērtības. Ja ikgadējā pārdotās kooperatīva biedru produkcijas vērtība ir mazāka par 1 milj. EUR, ikgadējais atbalsta apjoms tiek aprēķināts regresējošā secībā, sākot no 5% (sk. 2. tabulas 2. aili). Ja ikgadējā kooperatīva biedru pārdotās produkcijas vērtība ir lielāka par 1 milj. EUR, tad par to daļu, kas pārsniedz 1 milj. EUR, tiek piemērota ikgadēji regresējoša likme – sākot ar 2,5 % (sk. 2. tabulas 3. aili). Kopējais atbalsta apjoms vienam kooperatīvam nedrīkst pārsniegt 2. tabulas 4. ailes summas.

Atbalstu izmaksā vienu reizi gadā pēc kārtējam gadam iesniegto dokumentu saņemšanas un apstiprināšanas Lauku atbalsta dienestā. Atbalstu var saņemt atzītās lauksaimniecības pakalpojumu kooperatīvās sabiedrības pirmos piecus gadus kopš atzīšanas (par pirmo atzīšanas gadu ir uzskatāms 2004. gads vai turpmākie gadi, izvērtējot iepriekšējā gada saimnieciskās darbības rezultātus).

Atzītas lauksaimniecības pakalpojumu kooperatīvās sabiedrības var pretendēt uz atbalstu subsīdiju veidā kredītprocentu dzēšanai un investīcijām, kā arī uz Zemkopības ministrijas un Latvijas Hipotēku un zemes bankas izstrādāto projektu "Lauksaimniecības ilgtermiņa investīciju kreditēšanas programma".

2. tabula
Table 2

Atzīto lauksaimniecības pakalpojumu kooperatīvo sabiedrību atbalsta aprēķināšanas nosacījumi
Calculation terms of the support of accredited agricultural service cooperative societies

Gads Year	**Ikgadējais neto apgrozījums** Annual net turnover < EUR 1 000 000	**Ikgadējais neto apgrozījums** Annual net turnover > EUR 1 000 000	**Maksimālais atbalsta apjoms** Maksimumu amaunt ob support EUR
1	2	3	4
1. gads/year	5 %	2.5 %	100 000
2. gads/years	5 %	2.5 %	100 000
3. gads/years	4 %	2.0 %	80 000
4. gads/years	3 %	1.5 %	60 000
5. gads/years	2 %	1.5 %	50 000

Avots: Lauku attīstības plāns lauku attīstības programmas īstenošanai 2004. – 2006. www.likumi.lv/doc.php?id=97429 124 lpp.

Atbalstu izmaksā vienu reizi gadā pēc kārtējam gadam iesniegto dokumentu saņemšanas un apstiprināšanas Lauku atbalsta dienestā. Atbalstu var saņemt atzītās lauksaimniecības pakalpojumu kooperatīvās sabiedrības pirmos piecus gadus kopš atzīšanas (par pirmo atzīšanas gadu ir uzskatāms 2004. gads vai turpmākie gadi, izvērtējot iepriekšējā gada saimnieciskās darbības rezultātus).

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Lauksaimniecības pakalpojumu kooperatīvo sabiedrību atzīšana pamatojas uz grāmatvedības datiem par iepriekšējo pārskata gadu. Tāpēc kooperatīvās sabiedrībās liela nozīme ir pareizas grāmatvedības un iekšējās kontroles par saimniecisko darbību nodrošināšanai, lai finanšu pārskati sniegtu patiesu un skaidru priekšstatu par to finansiālo stāvokli darbības rezultātiem un naudas plūsmu.

Pamatojoties uz sadarbību ar Latvijas Republikas Zemkopības ministrijas Lauku attīstības departamentu, autore lauksaimniecības pakalpojumu kooperatīvo sabiedrību atzīšanai 2006. gadā izvērtēja 55 lauksaimniecības pakalpojumu kooperatīvo sabiedrību iesniegto dokumentāciju:

- ✓ atzīšanas pieteikumu;
- ✓ reģistrācijas apliecības kopiju;
- ✓ sabiedrības biedru sarakstu, kurā norādīts apgrozījums starp sabiedrību un sabiedrības biedriem;
- ✓ informāciju par pārpalikuma sadali;
- ✓ 2005. gada finanšu pārskatu.

Veicot lauksaimniecības pakalpojumu kooperatīvo sabiedrību iesniegumā uzrādītās apgrozījuma summas, kas ir viens no būtiskiem rādītājiem kooperatīvās sabiedrības atzīšanai lauksaimniecības pakalpojumu kooperatīvo sabiedrību statusā, un finanšu pārskatos sniedzamo datu salīdzināšanu, konstatējām, ka daļai kooperatīvo sabiedrību grūtības sagādāja pakalpojumu un preču apgrozījuma starp kooperatīvu un kooperatīva biedriem un citām personām identificēšana un noteikšana, kā arī atšķirību saskatīšana starp iepriekš minēto apgrozījumu un kooperatīvās sabiedrības neto apgrozījumu peļņas vai zaudējumu aprēķinā. Lauksaimniecības pakalpojumu kooperatīvās sabiedrībās neto apgrozījums peļņas vai zaudējumu aprēķinā nav rādītājs apgrozījuma īpatsvara starp sabiedrību un tās biedriem aprēķināšanai, jo pastāv atšķirības starp kooperatīvās sabiedrības neto apgrozījuma būtību saskaņā ar Gada pārskatu likumu un pakalpojumu apgrozījuma summu, saskaņā ar Kooperatīvo sabiedrību likumu.

Kooperatīvās sabiedrības neto apgrozījums ir ieņēmumu summa no produkcijas un pakalpojumu pārdošanas bez atlaidēm un pievienotās vērtības nodoklis. Pakalpojumu apgrozījums veido kooperatīvās sabiedrības biedriem pārdotie darbi, kurus kooperatīvā sabiedrība izpildījusi pēc savu biedru pasūtījuma ieņēmumi, kā arī ieņēmumi par materiālu pārdošanu kooperatīvu biedriem un kooperatīva izmaksas par produkcijas iepirkšanu no kooperatīvās sabiedrības biedriem. Ja iepriekš minētās atšķirības netiek ņemtas vērā, tad kooperatīvos, kuros visa iepirktā produkcija netiek uzreiz pārdota (graudi, medus u.tml.) un tā dēļ ir pieauguši krājumu atlikumi salīdzinājumā ar iepriekšējo gadu, tie netiek uzrādīti kooperatīvās sabiedrības neto apgrozījumā, bet ir atlikumā kooperatīvās sabiedrības aktīvos bilancē. Krājumu atlikumu palielinājums ir apgrozījuma starp kooperatīva biedriem palielinājums, kas pēc grāmatvedības noteikumiem nevar tikt uzrādīts kā neto apgrozījums.

Tā kā ne visi lauksaimniecības pakalpojumu kooperatīvo sabiedrību vadītāji un grāmatveži ir tik kompetenti, lai bez papildus skaidrojumiem varētu iesniegumā par kooperatīvās sabiedrības atzīšanu pareizi uzrādīt pakalpojumu apgrozījuma rādītājus, tika pilnveidota pieteikuma veidlapa „Iesniegums Lauksaimniecības pakalpojumu kooperatīvo sabiedrību atzīšanai 2007. gadā Lauku atbalsta dienestā", precizējot uzrādāmo rādītāju nosaukumus un skaidrojot to būtību.

Sadarbības ar Latvijas Republikas Zemkopības ministriju ietvarā 2006. gadā autore veica arī 20 Zemkopības ministrijas izvēlētu Lauksaimniecības pakalpojumu kooperatīvo sabiedrību vadības un grāmatvedības sistēmu pārbaudi kooperatīvās sabiedrībās uz vietas.

Veicot auditu, katrā no sarakstā ietvertajām LPKS (sk. 3. tabulu) izpildījām procedūras attiecībā uz sekojošo:

1. Vai Zemkopības ministrijai iesniegtajā LPKS pieteikumā par atzīšanu saskaņā ar 2003. gada 17. jūnija Ministru kabineta Nr. 328 " Noteikumi par lauksaimniecības kooperatīvās sabiedrības reģistrācijai nepieciešamajiem dokumentiem un šīs sabiedrības atzīšanas kārtība":
   1.1. uzrādītais biedru saraksts atbilst biedru uzskaites reģistra datiem un iekārtots atbilstoši Kooperatīvo sabiedrību likuma prasībām ;
   1.2. biedru pakalpojumu apgrozījums un neto apgrozījums atbilst grāmatvedības datiem un ir pareizi uzrādīts finanšu pārskatā;
   1.3. pārpalikuma sadale sabiedrības biedriem tiek veikta proporcionāli sabiedrības biedriem sniegto pakalpojumu apjomam.
2. Vai LPKS grāmatvedības sistēma nodrošina patiesu un skaidru informāciju par sabiedrības finansiālo stāvokli un darbības rezultātiem;
3. Vai LPKS grāmatvedība tiek kārtota atbilstoši normatīvo aktu prasībām;

4. Novērtēt LPKS finanšu pārskata formas un satura atbilstību Gada pārskatu likuma un obligāto Latvijas grāmatvedības standartu prasībām.

Veiktās procedūras apkopotā veidā ietvēra:
1. statūtu, Latvijas Republikas Uzņēmumu reģistra lēmumu, darbības reģistrācijas apliecību, biedru sarakstu un biedru kustības sarakstu apskati un salīdzināšanu ar Zemkopības ministrijā iesniegto,
2. grāmatvedības organizācijas dokumentu esamības pārbaudi un satura atbilstības LPKS saimnieciskās darbības grāmatvedības uzskaites nodrošināšanai vērtēšanu,
3. saimniecisko darījumu dokumentācijas un reģistru sagatavošanas izlases veida pārbaudi,
4. sintētiskās un analītiskās uzskaites datu savstarpēju salīdzināšanu un grāmatvedības datu salīdzināšanu ar pārskatu datiem,
5. gada pārskata formas un satura salīdzināšana ar normatīvajos aktos tiem izvirzītajām prasībām.

3. tabula
Table 3

Pārbaudīto lauksaimniecības pakalpojumu kooperatīvo sabiedrību sadalījums pa reģioniem un kooperatīvo sabiedrību veidiem
Distribution of approved agriculture services co-operative societies by regions and types of cooperative societies

Kooperatīvo sabiedrību veids Form of co-operative societies	**Vidzeme**	**Pierīga**	**Zemgale**	**Kurzeme**	**Latgale**
Piens / Milk	2		1	1	2
Graudi / Crops	2		3	1	
Dārzeņi un augļi/ Vegetable and Fruit		1	1	1	1
Bioloģiskā produkcija/ Biological production	1				1
Gaļa/ Meet		1			
Medus/ Honey		1			

Avots: Autores veidota tabula no pārbaudes uzdevuma saraksta.

Administratīvā un grāmatvedības informācijas pārbaude liecināja, ka atsevišķās kooperatīvās sabiedrībās bija nepilnības biedru uzskaitē. Biedru uzskaites reģistrs nebija iekārtots atbilstoši Kooperatīvo sabiedrību likuma prasībām. Biedru uzskaites reģistra dati par pajām nebija salīdzināti ar bilances pamatkapitāla summām. Daudzu kooperatīvo sabiedrību vadībai un grāmatvežiem trūka izpratnes par pajām atbilstoši kooperatīvo sabiedrību likuma normām. Tikai trijos pārbaudītajos kooperatīvos bija izpratne par pamatpaju un papildpaju būtību un to kustību. Pārsvarā tikai dibinātajiem bija vairākas pajas, bet pārējiem biedriem – tikai par vienai. Tāpat vairākos kooperatīvos nebija izpratnes par pamatkapitāla būtību, līdz ar to pamatkapitāla postenī bilancē uzrādīta tikai likumā noteiktā minimāla summa Ls 200 vai Ls 2000, bet pārējā paju vērtība uzrādīta rezerves kapitāla postenī.

Biedru pakalpojumu apgrozījums un neto apgrozījums atbilda grāmatvedības datiem un bija pareizi uzrādīti finanšu pārskatā.

Pārpalikuma sadale sabiedrības biedriem vai nu netika veikta un pārpalikums tika atstāts sabiedrības attīstībai, vai arī, ja kāda kooperatīvā sabiedrība to veica, tad tas notika saskaņā ar statūtos noteikto kārtību.

Grāmatvedības sistēmas pārbaudītajās lauksaimniecības pakalpojumu kooperatīvajās sabiedrībās kopumā nodrošināja patiesu un skaidru informāciju par sabiedrības finansiālo stāvokli un darbības rezultātiem. Grāmatvedība tiek kārtota atbilstoši normatīvo aktu prasībām.

Tomēr ne visās pārbaudītajās sabiedrībās finanšu pārskata forma un saturs atbilda Gada pārskata likuma un obligāto Latvijas grāmatvedības standartu prasībām un labai praksei.

Lielākās neatbilstības bija saistītas tieši finanšu pārskata pielikuma saturā un formā.

Sadarbības ar Latvijas Republikas Zemkopības ministriju ietvarā 2006. gadā autore izstrādāja LPKS administratīvās un grāmatvedības iekšējās kontroles pašnovērtējuma anketu un, pamatojoties uz saņemto anketu izpēti, veica LPKS grāmatvedības sistēmas atbilstības Latvijas grāmatvedības normatīvo aktu prasībām novērtēšanu.

No iesniegto anketu informācijas 27 LPKS grāmatvedības kārtošanai ir pieņemts grāmatvedis vai vairāki grāmatveži, bet 7 – LPKS grāmatvedību kārto Rajona lauku konsultāciju biroji. 26 LPKS grāmatvedību kārto, izmantojot kādu no grāmatvedības datorprogrammām. Biežāk lietotās grāmatvedības datorprogrammas ir *Tilde Jumis* – 8 LPKS, *G1* – 7 LPKS, *Zalktis* – 4 LPKS un *Kentaurs* – 2 LPKS. Citas izmantotās grāmatvedības datorprogrammas ir *1C*, *Cipars*, *Apvārsnis*, *DAIS* un *Grīns*. Astoņas LPKS grāmatvedību kārto manuāli, piemērojot žurnālorderu grāmatvedības formu astoņos gadījumos un vienā gadījumā žurnāla – virsgrāmatas formu.

4. tabula
Table 4

Izsūtīto un saņemto LPKS administratīvās un grāmatvedības iekšējās kontroles pašnovērtējuma anketu skaits
Number of distributed and received self-evaluation questionnaires regarding administrative and accounting inside control in Agricultural services co-operative societies

Rādītāji Data	**Kopā**/ Total	**tajā skaitā no 2006. gadā atzītām LPKS** including from co-operative societies approved of in 2006	
	Skaits/Number	**Skaits** /Number	**Procenti**/Interest
Izsūtītas anketas Questionnairies distributed	75	54	72
Saņemtas anketas Questionnairies received	35	30	86

Avots: Autores iegūtā un apkopotā informācija.

Gada pārskatu atbilstību Latvijas Republikas normatīvo aktu prasībām raksturo LPKS sniegtās atbildes anketā "Gada pārskats", atbildot uz jautājumiem par gada pārskata atsevišķu sastāvdaļu noformēšanu. Izvērtējot sniegtās atbildes, 18 LPKS gada pārskats tiek sagatavots atbilstoši labas grāmatvedības praksei, ar datoru, kā vienotu dokumentu. 14 LPKS gada pārskatam izmanto veikalos nopērkamās bilances, peļņas vai zaudējuma aprēķina, naudas plūsmas, pašu kapitāla izmaiņu pārskata tipogrāfiski iespiestas veidlapas, kas neietver visu normatīvos aktos noteikto gada pārskatos uzrādāmo informāciju par sabiedrības finansiālo stāvokli, darbības rezultātiem un naudas plūsmu. Sešas LPKS, galvenokārt no Preiļu un Daugavpils rajoniem, gada pārskatus neiesniedz Latvijas Republikas Uzņēmumu reģistrā. Ņemot vērā faktisko situāciju LPKS gada pārskatu sagatavošanas praksē, apmācības semināra programmā tika iekļauti gada pārskata satura skaidrojums un noformēšana atbilstoši Gada pārskata likuma un Latvijas Grāmatvedības standartu prasībām.

Izvērtējot anketās sniegtās atbildes par sabiedrības kontroles vidi un ņemot vērā to, ka LPKS ir mazas sabiedrības pēc nodarbināto skaita un vairākums no tām arī pēc neto apgrozījuma summas un bilances kopsummas, administratīvās kontroles risks pašu LPKS skatījumā ir zems vai vidējs.

LPKS anketās sniegtās atbildes par atsevišķu uzskaites objektu grāmatvedības organizācijas norāda uz to, ka LPKS grāmatvedības kārtošanā un gada pārskata sagatavošanā kopumā ievēro Latvijas Republikas normatīvo dokumentu par grāmatvedību un gada pārskatiem noteikumus. To apliecina arī LPKS atbildes uz anketā uzdoto jautājumu par Valsts ieņēmuma dienesta veikto pārbaužu rezultātiem, uz kuru galvenokārt atbildēts, ka soda nauda nav aprēķināta vai saņemti tikai aizrādījumi, kas liecina par nebūtiskiem trūkumiem.

Pētījums par LPKS finanšu un grāmatvedības kvalitatīvas informācijas nodrošināšanu noslēdzās ar semināru organizēšana LPKS vadītājiem un grāmatvežiem par tematu "Grāmatvedības aktualitātes un administratīvās un grāmatvedības iekšējās kontroles pilnveidošana".

No uz semināru uzaicinātajām 75 LPKS pārstāvētas bija 50, tajā skaitā no 2006. gadā atzītajām LPKS pārstāvētas bija 42 jeb 78 procenti. Semināros piedalījās 71 dalībnieks, kooperatīvo sabiedrību valdes priekšsēdētāju un grāmatvežu personās, tajā skaitā 60 jeb 85% personas bija no 2006. gadā atzītajām LPKS (sk. 5. tabulu).

Vienas dienas seminārā tika aplūkoti, jautājumi, kas, pamatojoties uz iepriekšējo izpēti, LPKS ir ļoti aktuāli. Mūsu skatījumā tie bija: kooperatīvo sabiedrību biedru uzskaite; paju veidi un to aprēķināšana; kooperatīvo sabiedrību pamatkapitāls un pašu kapitāls, to uzskaite; administratīvās un grāmatvedības iek-

šējās kontroles pašnovērtējums kā kompetences pārvaldības un grāmatvedības jautājumos instruments; pieteikuma kooperatīvo sabiedrību atzīšanai aizpildīšana. Semināra laikā tika analizētas būtiskākās kļūdas gada pārskata sagatavošanā un grāmatvedības kārtošanā, kas ietekmē gada pārskata skaidras un patiesas informācijas atbilstību.

5. tabula
Table 5

Semināru dalībnieki
Participant of the seminar

Semināra/ Seminar		**Pārstāvēto LPKS skaits** Number representation agricultural services cooperative cocieties		**Dalībnieku skaits** Number intereted person	
datums date	**vieta** place	**kopā** total	**tajā skaitā 2006. gadā atzītie** including from accredited in 2006	**kopā** total	**tajā skaitā no 2006. gadā atzītiem** including from accredited in 2006
02.11.2006.	Preiļi	13	12	18	17
08.11.2006.	Valmiera	20	16	29	22
16.11.2006.	Kuldīga	10	8	14	12
23.11.2006.	Jelgavā	7	6	10	9
	Kopā/ Total	50	42	71	60

Avots: Autores iegūtie un apkopotie dati.

Secinājumi
Conclusions

1. Lauksaimniecības pakalpojumu kooperatīvo sabiedrību veidošanos un attīstību veicināja 2002. gadā veiktie grozījumi Kooperatīvo sabiedrību likumā, ieviešot jaunu kooperatīvo sabiedrību veidu – lauksaimniecības pakalpojumu kooperatīvā sabiedrība, kuru saimnieciskā darbība ir atbrīvota no uzņēmuma ienākuma nodokļa maksāšanas un pārpalikuma sadale kooperatīva biedriem noteikta proporcionāli katra biedra apgrozījuma summai kooperatīvajā sabiedrībā.
2. Pēdējos trijos gados LPKS skaits ir robežās no 70 līdz 80 kooperatīviem. Visvairāk ir graudu un piena ražotāju kooperatīvo sabiedrību. Pēdējos gados pieaug augļu un dārzeņu ražotāju un bioloģiskās produkcijas ražotāju kooperatīvo sabiedrību skaits.
3. Valsts subsīdiju atbalsts LPKS attīstībai tika uzsākts maksāt ar 2001. gadu. Laika posmā no 2001. gada līdz 2004. gadam no valsts atbalsta kooperatīvo sabiedrību attīstībai izmaksāti 625 tūkst. latu.
4. Ar 2004. gadu saskaņā ar Latvijas pievienošanās Līgumu Eiropas Savienībai tiek pārstrādāta atbalsta politika. Atbalstu kooperatīvām sabiedrībām aprēķina kā noteiktu procentu no kooperatīvās sabiedrības biedru ikgadējās pārdotās produkcijas vērtības. Atbalstu var saņemt tikai saskaņā ar 2003. gada 17. jūnija Ministru kabineta Nr. 328 "Noteikumi par lauksaimniecības kooperatīvās sabiedrības reģistrācijai nepieciešamajiem dokumentiem un šīs sabiedrības atzīšanas kārtība" katru gadu atzītas LPKS, vērtējot iepriekšējā pārskata gada saimnieciskās darbības rādītājus.
5. 2005. un 2006. gadā atzītās kooperatīvās sabiedrības varēja pretendēt uz valsts atbalstu – "Kredītprocentu dzēšana", "Investīciju atbalsts lauksaimniecībā". Jaunie kooperatīvi varēja pretendēt uz atbalsta pasākumu "Kooperācijas attīstības atbalsts jaunajiem kooperatīviem" un "Atbalsta ieguldījumi lauksaimniecības nozarē"
6. 2005. gadā kopējā atbalsta summa LPKS bija 521,7 tūkst. latu.
7. Tiesiskās bāzes sakārtošana un mērķtiecīgs valsts atbalsts veicināja arī atzīto kooperatīvo sabiedrību īpatsvara palielināšanos no 40% – 2004. gadā līdz 73% – 2006. gadā. Par 2005. gada saimnieciskās darbības rādītājiem 2006. gadā atzīto lauksaimniecības pakalpojumu kooperatīvo sabiedrību biedru skaits bija 2533, kopējais apgrozījums 56,4 milj. latu, tajā skaitā apgrozījums starp kooperatīviem un to biedriem sastādīja 47.6 milj. latu vai 84 procenti. No 54 atzītajām sabiedrībām 44 sabiedrību

darbības rezultāts bija pārpalikums kopējā summā 1 milj. latu, kuru sabiedrības pārsvarā ir paredzējušas ieguldīt attīstībai.

8. Salīdzinot 2006. gadā atzīto kooperatīvo sabiedrību saimnieciskās darbības rādītājus par 2005. gadu ar 2005. gadā atzīto kooperatīvo sabiedrību 2004. gada rādītājiem, apgrozījums starp sabiedrībām un tās biedriem ir palielinājies 1,5 reizes. Uzlabojušies arī saimnieciskās darbības rezultāti. Ja 2005. gadā no 45 atzītajām sabiedrībām zaudējumi bija 20 sabiedrībās ar kopējo summu 84 tūkst. latu, tad, noslēdzot 2005. gadu, no 54 atzītajām sabiedrībām zaudējumi bija tikai 10 sabiedrībām – kopsummā 25 tūkst. lati.
9. Grāmatvedības sistēmas pārbaudītajās lauksaimniecības pakalpojumu kooperatīvajās sabiedrībās kopumā nodrošināja patiesu un skaidru informāciju par sabiedrības finansiālo stāvokli un darbības rezultātiem. Grāmatvedība tiek kārtota atbilstoši normatīvo aktu prasībām. Tomēr ne visās pārbaudītajās sabiedrībās finanšu pārskata forma un saturs atbilda Gada pārskata likuma un obligāto Latvijas grāmatvedības standartu prasībām un labai praksei. Lielākās neatbilstības bija saistītas tieši finanšu pārskata pielikuma saturā un formā.

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KOOPERĀCIJAS ATTĪSTĪBA LAUKSAIMNIECĪBĀ ZEMGALES REĢIONĀ

THE DEVELOPMENT OF COOPERATION IN AGRICULTURE IN ZEMGALE REGION

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Abstract

One of the most important conditions to provide successful production is to understand economical and other processes in economic. One of the most important economical processes in economics is cooperation. The experience of many countries shows, that cooperation is very effective in agriculture. Researches testify that cooperation is very effective in realization of goods, processing. Cooperation promotes modernization, progress of sciences and technology.

In despite of situation that cooperation becomes more and more popular in Latvia overall, in Zemgale region the development of cooperation in agriculture is comparatively weak. The results of research show that the main reason why farmers take part in cooperatives is an opportunity to store and gainfully distribute the production. The main problem, which has an impact on cooperatives, is deficiency of legislation. The main reason, which prevents to join to cooperatives, is a lack of information about possibilities to cooperate.

Key words: agriculture, cooperation, cooperatives, rural farms.
Atslēgas vārdi: lauksaimniecība, kooperācija, kooperatīvās sabiedrības, zemnieku saimniecības.

Ievads
Introduction

Sekmīgas ražošanas viens no galvenajiem priekšnosacījumiem ir pareiza to ekonomisko un citu procesu izpratne, kuri norisinās tautsaimniecībā. Turklāt šos procesus jāmāk arī veiksmīgi pielietot. Viens no svarīgākajiem ekonomiskajiem procesiem ir kooperācija.

Pasaules pieredze liecina, ka sadarbības formas, kas balstās uz kooperāciju, ir ļoti efektīvas tieši attiecībā uz lauku vidi. Tāpēc par kooperācijas nozīmi tiek runāts galvenokārt saistībā ar lauksaimniecību. Taču nenoliedzama ir kooperācijas nozīme arī citās darbības jomās.

Par vienu no uzdevumiem lauksaimniecības attīstībā Latvijā tiek uzskatīta nepieciešamība veicināt mazo un vidējo lauksaimniecības uzņēmumu un saimniecību kooperāciju un vienotu dalību lauksaimniecības produktu tirgū, kas mazinātu lauksaimnieciskās ražošanas sadrumstalotību un ļautu nodrošināt lielāku konkurētspēju. Tas tiek attiecināts gan uz savstarpējo kooperāciju ražošanas procesā, gan saražotās produkcijas noietu (Roze M., 2004.).

Hipotēze: Kooperācija Zemgales reģionā vēl joprojām ir vāji attīstīta, lai gan valstī kopumā kooperācija kļūst arvien nozīmīgāka.

Darba mērķis: izvērtēt kooperācijas attīstību Zemgales reģionā un dot priekšlikumus tās pilnveidošanai.

Darba uzdevumi:

1. dot temata teorētisko pamatojumu;
2. izpētīt situāciju kooperācijas attīstībā Latvijā un Zemgales reģionā;
3. noskaidrot Zemgales zemnieku attieksmi pret lauksaimniecības kooperatīvajām sabiedrībām.

Materiāli un metodes
Materials and Methods

Pētījuma uzdevumu risināšanai izmantoti tiesību akti, statistikas dati, Lauku atbalsta dienesta informācijas bāze, publikācijas.

Pielietotas abstrakti – loģiskā, grafiskā, monogrāfiskā, aptaujas, analītisko grupējumu, matemātiskās statistikas pētījumu metodes.

Rezultāti un diskusija
Results and Discussion

1. Kooperācijas teorētiskais pamatojums
1. Theoretical Justification of Cooperation

Vārds "***kooperācija***" cēlies no latīņu valodas vārda *"cooperatio"* – līdzdalība, līdzdarbība, sadarbība, kopdarbs. Tās pirmsākumi meklējami jau pirms vairākiem gadu tūkstošiem. Mūsdienu izpratnē kooperācija ir kļuvusi par daudz sarežģītāku un komplicētāku veidojumu.

Kooperācijas jēdziena būtību dažādi autori interpretē dažādi. Var atrast ļoti vispārīgus skaidrojumus, kurus var attiecināt uz jebkuru personu darbību, kas var būt gan formāla, gan neformāla, ar ekonomisku vai neekonomisku dabu. Tā var turpināties kādu noteiktu laiku vai kāda noteikta darba veikšanai (Rokholts P. O., Ozoliņš N., Kaļķe K., Lismanis A., Pīrāgs K., 1999.).

Bez tam literatūrā atrodami arī konkrētāki skaidrojumi, kuros kooperācijas jēdziens aplūkots daudz vispusīgāk un komplicētāk, proti, ne tikai kā vienkārša vairāku indivīdu sadarbība. Šajās definīcijās ir noteikti kooperācijas principi, sadarbības veidi, mērķi un citas lietas, kas konkretizē un padara skaidrāku kooperācijas būtību. Taču pamatā definīcijās galvenais uzsvars tiek likts uz vienu kooperācijas pusi – **sadarbību**. Tomēr jāteic, ka personas apvienojas, lai sasniegtu konkrētu **mērķi**. Tās formulē problēmu un ar kooperācijas palīdzību veic darbības, lai šo problēmu atrisinātu.

Tātad, pēc autoru domām, relatīvi vispusīgu definējumu ir sniedzis A. Miglavs: "…kooperācija ir darbība, kad vairākas personas, kurām ir kopīgas intereses, apvieno savus pūliņus, lai sasniegtu noteiktu mērķi, kuru katrs no viņiem atsevišķi sasniegt nevar" (Buģina V., Pikšēna B., Pučure I., Belovs M., Leščevica M., 2002.).

Kas pamudina cilvēkus iesaistīties kooperācijā? Pētījumā "Kooperācija un lauku problēmas. Latvijas Rietumvidzemes piemērs" kooperācijas nepieciešamība tiek pamatota ar to, ka vienam cilvēkam ir grūti panākt visu veiksmīgas uzņēmējdarbības veikšanai nepieciešamo priekšnosacījumu (darbaspēks, zeme, kapitāls, uzņēmējspējas, informācija) apvienošanu labumu nesošā kopumā. Tas ir izdarāms vieglāk, ja apvienojas vairāki indivīdi.

Bez tam zinātniskajā literatūrā var atrast apgalvojumu, ka "cilvēki kooperējas, lai paveiktu to, ko katrs atsevišķi nevar paveikt, vai arī tādēļ, lai kaut ko paveiktu ekonomiski, morāli vai psiholoģiski izdevīgāk, labāk nekā tad, ja viņi darbotos šķirti, nodalīti cits no cita." Šis apgalvojums sasaucas ar A. Miglava sniegto kooperācijas definīciju. Turklāt autori uzsver, ka, "tikai pateicoties savstarpējai sadarbībai un palīdzībai, cilvēce ir nodrošinājusi savu attīstību un uzplaukumu…" (Bondars A., Moisejs A., Puduls A., 1996.; Rokholts P. O., Ozoliņš N., Kaļķe K., Lismanis A., Pīrāgs K., 1999.).

Par kooperāciju kā cilvēces attīstības virzītājspēku runā arī kooperācijas teorijas pamatlicējs A. Čajanovs. Pēc šā autora domām, kooperācija ir vienīgais un pareizais lauksaimniecības attīstības ceļš. "Lauksaimniecības kooperācija palīdzēs apvienot izkaisītās, sīkās zemnieku saimniecības… nodrošināt tām liela mēroga saimniekošanas un uzlabotas tehnikas izmantošanas priekšrocības." (Karnīte R., 2001.) Lai gan A. Čajanova darbi sarakstīti pirms daudziem gadu desmitiem, vairumā lietu var vilkt paralēles ar mūsdienu situāciju. Saskaņā ar Centrālās Statistikas pārvaldes datiem patlaban Latvijas laukos pārsvarā dominē mazas saimniecības. 2005. gadā 71,3% no kopējā saimniecību skaita izmantotā LIZ platība bija mazāka par 10 ha, turklāt līdz 1 ha bija 13,3% saimniecību. Līdzīga situācija ir arī lopu skaita ziņā – 2005. gadā līdz 10 slaucamām govīm bija 95,6 % saimniecību, līdz 10 cūkām – 92,3% saimniecību (Zemkopības ministrija, 2006.).

Šādām mazām saimniecībām ir vairāki trūkumi: vāja konkurētspēja, kas īpaši aktuāla kļuvusi pēc Latvijas iestāšanās Eiropas Savienībā, zems finansiālais un tehniskais nodrošinājums, atkarība no lielajiem

produkcijas pārstrādātājiem, jo niecīgā produkcijas daudzuma dēļ šīs saimniecības nevar diktēt savas prasības (Špoģis K., 1999.).

Kā viena no kooperācijas priekšrocībām, kas tieši ietekmē mazo saimniecību saimnieciskās darbības rezultātus, ir iespēja atteikties no starpnieku pakalpojumiem, jo bieži vien, kamēr zemnieka saražotā produkcija nonāk pie patērētāja, tā iziet vairākus posmus, kur darbojas uzpircēji, pārstrādātāji, uzglabātāji, tirgotāji un tamlīdzīgi, kuri gūst lielāko daļu no patērētājiem pārdotās produkcijas vērtības. Jāuzsver, ka Latvijā starpnieku pakalpojumi ir dārgi. Iesaistīšanās kooperācijā zemniekiem dod iespēju pārdot savu saražoto produkciju tieši patērētājam, tādā veidā palielinot savus ienākumus.

Pasaulē izplatīts kooperācijas veids, kas Latvijā diemžēl vēl nav guvis pietiekamu ievērību, ir vertikālā kooperācija. Tā atvieglo saražotās produkcijas realizāciju, kā arī palielina atsevišķu ražotāju ienākumus. Vertikālās sadarbības kooperatīvos ietilpst atšķirīgas funkcijas pildoši un dažādās ražošanas procesu pakāpēs darbojošies uzņēmumi, piemēram, ražošanas resursu piegādātāji – zemnieki – pārstrādātāji – tirgotāji. Vertikālā kooperācija samazina noieta un cenu riskus, sniedz priekšrocības konkurences cīņā.

Līdz ar to, pamatojoties uz dažādu teorētiķu darbiem un pasaules pieredzi, var apgalvot, ka viens no labākajiem esošās situācijas lauksaimniecībā risinājumiem ir **kooperācija**. Taču pastāv divi priekšnoteikumi, kuru ievērošana ir kooperācijas efektivitātes nodrošināšanas pamatā:

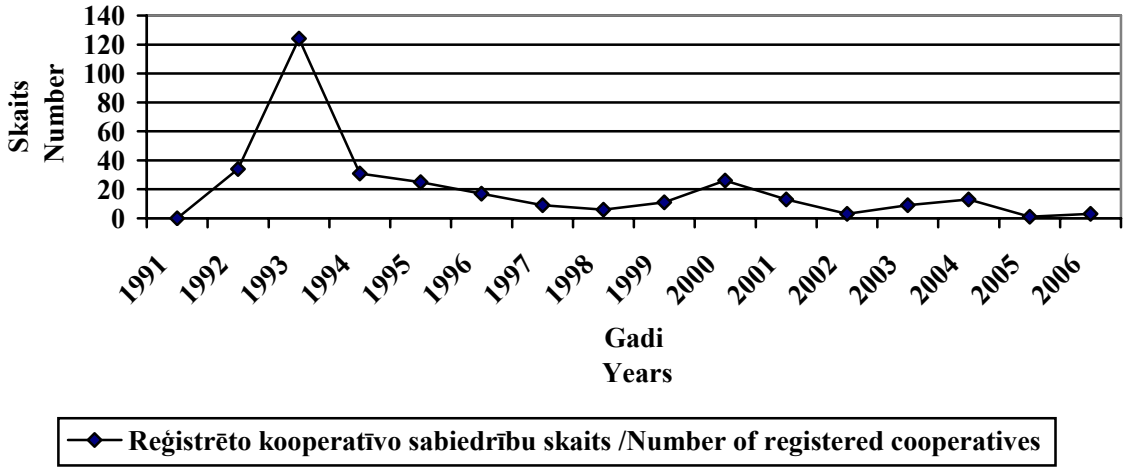
1) kooperācija pamatražošanas atsevišķos posmos nav mērķtiecīga;
2) kooperācija ir nepieciešama un vislielāko efektivitāti nodrošina produkcijas realizācijas, resursu iegādes, pakalpojumu pieejamības nodrošināšanā, lai iegādātos dārgu un augstražīgu tehniku, izejvielas, kopīgi risinātu kvalitātes problēmas, veidotu tirgū pieprasītas produkcijas partijas, rastu iespējas saņemt nepieciešamos pakalpojumus par to pašizmaksu. Šis kooperācijas veids savu pozitīvo ietekmi pierādījis arī attīstītajās valstīs (Ozoliņš N., 1998.; Salcēviča A., 1997.).

Kā formāla kooperācijas ideju īstenotājinstitūcija ir kooperatīvs. Ar "kooperatīva" jēdzienu parasti apzīmē kooperācijas formas, kas reģistrētas attiecīgās valsts likumdošanā paredzētajā kārtībā. Uz kooperatīviem Latvijā var attiecināt dažādu – gan Latvijas, gan Eiropas Savienības – normatīvo aktu prasības. Vistiešāk kooperatīvo sabiedrību darbību ietekmē Kooperatīvo sabiedrību likums, krājaizdevu sabiedrībām – Krājaizdevu sabiedrību likums. Pēc Latvijas iestāšanās Eiropas Savienībā (ES), arvien aktuālāks kļūst jautājums par starptautiska mēroga kooperatīvo sabiedrību dibināšanu, kas var būt kā iespēja arī kooperatīviem lauksaimniecībā palielināt savus darbības apjomus. Līdz ar to, ja Latvijā paredzēts reģistrēt Eiropas kooperatīvo sabiedrību vai Latvijā reģistrētā kooperatīvā sabiedrība tieši piedalās Eiropas kooperatīvās sabiedrības dibināšanā, jāņem vērā Eiropas kooperatīvo sabiedrību likumā ietvertās prasības. Katras konkrētas sabiedrības darbības pamatdokuments ir saskaņā ar Kooperatīvo sabiedrību likumu izstrādāti un pieņemti sabiedrības statūti.

"Kooperatīvo sabiedrību likumā" teikts, ka "kooperatīvā sabiedrība ir brīvprātīga fizisko un juridisko personu apvienība, kuras mērķis ir sniegt pakalpojumus tās biedru saimnieciskās darbības efektivitātes paaugstināšanai". 2002. gadā likumā tika veikti grozījumi un radīts jauns kooperācijas veids – lauksaimniecības pakalpojumu kooperatīvā sabiedrība (LPKS), kas tiek definēta kā "kooperatīvā sabiedrība, kura sniedz pakalpojumus lauksaimniecības produktu ražotājiem, bet nenodarbojas ar lauksaimniecības produktu ražošanu" (Kooperatīvo sabiedrību likums, 1998.).

2. Situācijas raksturojums kooperācijā lauksaimniecībā Latvijā un Zemgales reģionā
2. The Description of Situation in Cooperation in Agriculture in Latvia and Zemgale Region

Kopumā laikā no 1991. gada 1. janvāra līdz 2007. gada 2. janvārim Latvijā kopumā bija reģistrēta 3521 kooperatīvā sabiedrība, savukārt Zemgales reģionā reģistrētas 324 kooperatīvās sabiedrības jeb 9% no visām Latvijā reģistrētajām kooperatīvajām sabiedrībām. Latvijā kopumā kooperatīvās sabiedrības veido aptuveni 1,7% no kopējā reģistrēto uzņēmumu skaita (209 605 uzņēmumi), savukārt Zemgalē – 2,3% no reģionā reģistrēto uzņēmumu skaita (14 212 uzņēmumi). Visvairāk – 45% no kopējā skaita ir reģistrētas Jelgavā un Jelgavas rajonā, 38% – Bauskā un Bauskas rajonā, 17% – Dobelē un Dobeles rajonā.



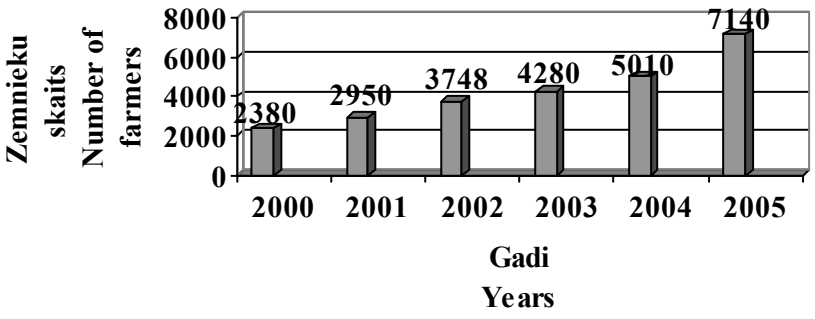
1. attēls. **Zemgales reģionā reģistrēto kooperatīvo sabiedrību skaits 1991. – 2006. gadā**
Figure 1 The Number of Registered Cooperatives in Zemgale Region from 1991 to 2006

Avots: *V. Buģina, K. Pabērza, izmantojot Lursoft datus.*

Kā liecina 1. attēla dati, Zemgales reģionā reģistrēto kooperatīvo sabiedrību skaitam piemīt tendence katru gadu samazināties. Visvairāk kooperatīvās sabiedrības Zemgalē reģistrētas 1993. gadā – 38 % no kopējā reģistrēto kooperatīvu skaita. Šajā laikā galvenokārt dibināja sabiedrības, kas nodarbojās ar lauksaimniecisko darbību. Iemesls kooperatīvo sabiedrību dibināšanai bija Latvijas likumos un citos normatīvajos aktos paredzētās kooperatīvu priekšrocības privatizācijas procesā. Kooperatīvi tika izmantoti kā veids īpašumu atgūšanai no valsts. Vēlākos gados reģistrēto kooperatīvo sabiedrību skaits krasi samazinājās. Diemžēl nav pieejama informācija par to, cik no visām Zemgalē reģistrētajām kooperatīvajām sabiedrībām patlaban reāli darbojas. Taču valstī kopumā no kopējā reģistrēto kooperatīvu skaita 2007. gada 2. janvārī aktīvi ir 56% kooperatīvu. Likvidētās kooperatīvās sabiedrības veido 2,7% no kopējā valstī likvidēto uzņēmumu skaita.

Pēdējos gados netiek veikta kooperatīvo sabiedrību skaita apkopošana sadalījumā pa darbības veidiem, tāpēc nav precīzi zināms, cik kooperatīvi darbojas lauksaimniecībā. Pēdējā šāda veida informācijas vākšana, apkopojot Latvijas Republikas Uzņēmumu reģistra datus, tika veikta 2004. gadā. 2004. gada 1. septembri 35% no kopējā kooperatīvu skaita veidoja dzīvokļu īpašnieku kooperatīvi, 21% – automašīnu garāžu īpašnieku kooperatīvi, 12% – zvejniecības kooperatīvi, 15% – LPKS, 4% – krājaizdevu kooperatīvās sabiedrības, 8% – piensaimnieku kooperatīvi, 5% – cita veida kooperatīvi (Kučinskis J., 2004.).

Lielāka uzmanība tiek pievērsta LPKS, tāpēc par šīm sabiedrībām pieejama plašāka informācija, ko var izmantot kooperatīvu attīstības tendenču analīzei lauksaimniecībā.



2. attēls. **Zemnieku skaita izmaiņas kooperatīvajās sabiedrībās 2000. – 2005. gadā**
Figure 2. The Changes of Number of Farmers in Cooperatives from 2000 to 2005

Avots: Zemkopības ministrija, 2006.

Saskaņā ar Zemkopības ministrijas datiem, LPKS darbojošos zemnieku skaits katru gadu palielinās. Iesaistīto zemnieku skaita pieaugums ir viens no rādītājiem, kas liecina par pozitīvām kooperatīvo sabiedrību attīstības tendencēm, jo ļauj secināt, ka zemnieki arvien vairāk sāk apzināties kooperatīvo sabiedrību nozīmi veiksmīgas sava uzņēmuma darbības nodrošināšanā. Ja 2000. gadā kooperatīvajās sabiedrībās darbojās 2380 zemnieki, tad 2005. gadā to skaits palielinājies līdz 7140 jeb trīs reizes(2. att. dati). Visstraujākais pieaugums bijis 2005. gadā, salīdzinot ar 2004. gadu, – par 43 procentiem.

2005. gadā kopumā Latvijā reģistrētas 78 LPKS. Šo kooperatīvo sabiedrību struktūra parādīta 1. tabulā.

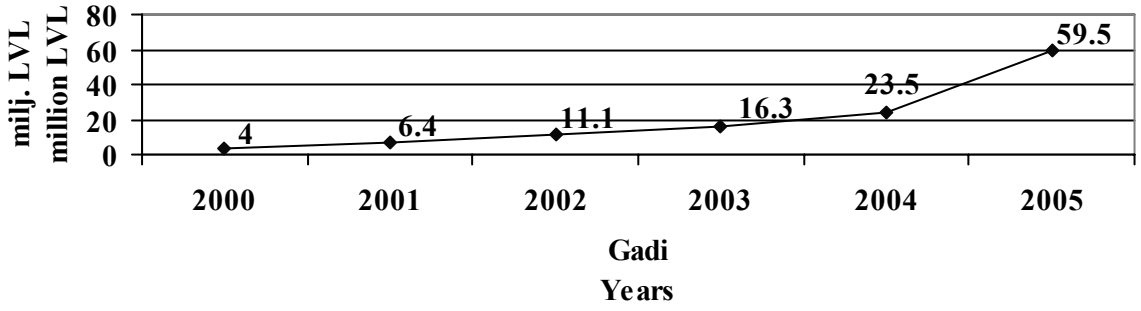
1. tabula /
Table 1

Kooperatīvo sabiedrību sadalījums pa nozarēm 2005. gadā
The Breakdown of Cooperatives by Field of Specialization in 2005

LPKS sadalījumā pa nozarēm	Skaits	Struktūra, %
Graudaugi / *Crops*	29	38
Piens / *Milk*	28	36
Dārzeņi / *Vegetables*	10	13
Lauksaimniecības pakalpojumi / *Agricultural services*	5	6
Gaļa / *Meat*	5	6
Medus / *Honey*	1	1
Kopā / *Total*:	**78**	**100**

Avots: *Zemkopības ministrija, 2006.*

Par pozitīvu kooperācijas attīstību liecina arī kooperatīvu ietekmes palielināšanās vietējā tirgū.



3. attēls. **LPKS apgrozījuma dinamika 2000. – 2005. gadā, milj. Ls**
Figure 3. The Dynamic of Turnover in
Agricultural Services Co-operative Societies form 2000 to 2005, million Ls

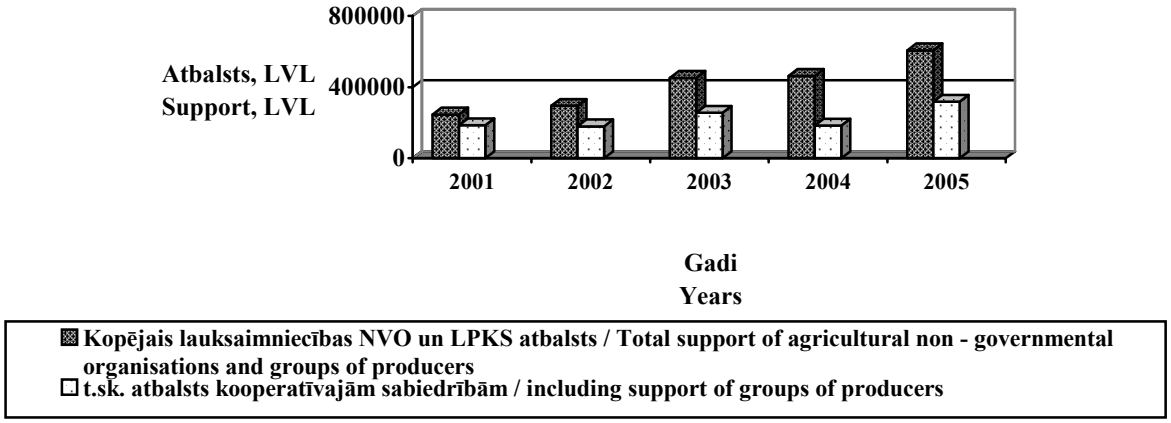
Avots: *Zemkopības ministrija, 2006.*

LPKS apgrozījumam katru gadu ir raksturīga tendence palielināties(sk. 3. att. datus). Salīdzinot ar 2000. gadu, 2005. gadā apgrozījums pieaudzis gandrīz vai 15 reizes, tas ir, no 4 miljoniem Ls līdz 59.5 miljoniem Ls. Aprēķinot ķēdes rādītājus, var secināt, ka arī salīdzinājumā ar iepriekšējo gadu, straujākais neto apgrozījuma pieaugums vērojams 2005. gadā – 2,5 reizes. Turklāt faktiskais apgrozījuma apjoms 2005. gadā pārsniedz iepriekš prognozēto. Tas ļauj secināt, ka arī turpmāk LPKS darbībā būs vērojama izaugsme.

Liela nozīme kooperatīvo sabiedrību attīstībā ir saņemtajam finansiālajam atbalstam. Atzītās LPKS var pretendēt gan uz valsts, gan Eiropas Savienības atbalstu. Viens no valsts sniegtajiem finansiālā atbalsta veidiem ir subsīdiju programma "Lauksaimniecības nevalstisko organizāciju (NVO) un lauksaimniecības pakalpojumu kooperatīvo sabiedrību (LPKS) atbalsts".

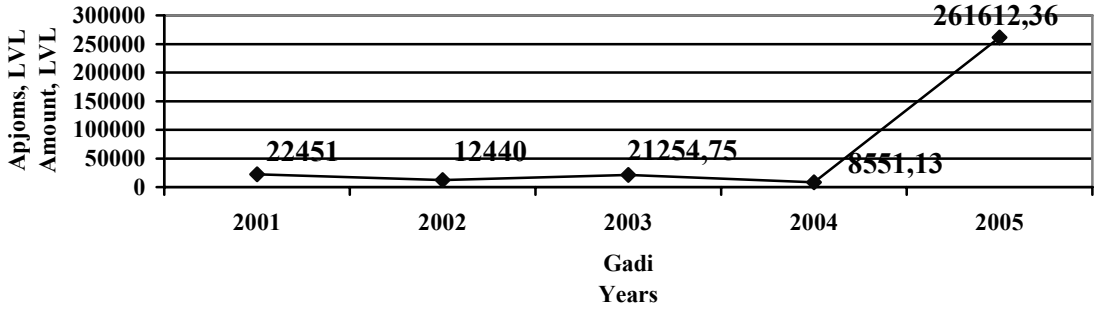
Valsts atbalsts lauksaimniecības NVO un LPKS ar katru gadu palielinās. Sākotnēji lielāko īpatsvaru kopējā atbalsta summā veidoja atbalsts kooperācijas attīstībai, savukārt pēdējos gados arvien lielākas naudas summas tiek paredzētas lauksaimniecības NVO atbalstam un to savstarpējās sadarbības veicināšanai.

2001. gadā atbalsts kooperācijai veidoja 75,5% no kopējā izmaksātā atbalsta šajā subsīdiju programmā, savukārt 2005. gadā atbalsts LPKS bija vairs tikai 52 procenti. No tā 88% tika izmaksāti kredītprocentu dzēšanai atzītajām LPKS un 22% – kā kooperācijas attīstības atbalsts jaunajām un atzītajām LPKS. Savukārt, izpētot izmaiņas atbalstā kooperatīvajām sabiedrībām, var secināt, ka 2005. gadā salīdzinājumā ar 2001. gadu, atbalsta apjoms ir pieaudzis par 78 procentiem.



4. attēls. **Valsts atbalsts kooperācijai 2001. – 2005. gadā**
Figure 4. National Support to Cooperation from 2001 to 2005

Avots: *V. Buģina, K. Pabērza, izmantojot LAD datus.*



5. attēls. **Izmaksāto subsīdiju kooperācijas veicināšanai apjoms Zemgales reģionā 2001. – 2005. gadā**
Figure 5. Payment of Support of Agricultural Groups of Producers from 2001 to 2005

Avots: *V. Buģina, K. Pabērza, izmantojot LAD datus.*

2001. gadā Zemgales reģionam izmaksātā atbalsta apjoms veidoja 12% no kopējās šajā subsīdiju programmā izmaksātās summas un to saņēma pieci kooperatīvi. 2002. gadā izmaksāto subsīdiju apjoms, salīdzinot ar 2001. gadu, samazinājās gandrīz vai par 50% un veidoja 7% no kopējā izmaksātā atbalsta. Subsīdijas saņēma divi kooperatīvi. 2003. gadā izmaksātais subsīdiju apjoms salīdzinājumā ar 2002. gadu palielinājās par 71% un veidoja 8% no kopējā izmaksātā atbalsta apjoma. Subsīdijas saņēma trīs kooperatīvi. 2004. gadā vērojams straujš atbalsta apjoma samazinājums par gandrīz vai 60 procentiem. Taču šajā gadā arī kopējais kooperācijas attīstībai izmaksātais atbalsta apjoms salīdzinājumā ar 2003. gadu, samazinājās (sk. 4. attēlu). Subsīdijas saņēma četri kooperatīvi. 2005. gadā Zemgales reģions salīdzinājumā ar citiem reģioniem saņēma vislielāko atbalstu kooperācijas attīstībai. Šajā gadā saņemtais atbalsts, salīdzinot ar 2004. gadu, palielinājās gandrīz vai 30 reizes. Visa summa tika izmaksāta kredītprocentu dzēšanai atzītajām LPKS. Subsīdijas saņēma viens kooperatīvs.

Kopumā Zemgales reģions no 2001. līdz 2005. gadam salīdzinājumā ar citiem reģioniem ir saņēmis vislielāko atbalsta summu, taču tas noticis galvenokārt tāpēc, ka liels atbalsta apjoms tika saņemts 2005. gadā(sk. 5. att).

Kopumā 2004. un 2005. gadā LPKS varēja pretendēt uz šādiem valsts finansiālā atbalsta veidiem:

- kooperācijas attīstības atbalsts jaunajiem kooperatīviem;
- atbalsts atzītām LPKS;
- atbalsts kredīta, līzinga vai faktoringa kredītprocentu dzēšanai LPKS;
- atbalsts jauno augļu un dārzeņu audzētāju grupu sākotnējās atzīšanas un darbības veicināšanai;
- investīciju atbalsts lauksaimniecībā "Lauksaimniecības ilgtermiņa investīciju kreditēšanas programmas" ietvaros.

No ES pieejamā atbalsta kooperatīvās sabiedrības varēja pretendēt uz ES struktūrfondu atbalstu Lauku attīstības plāna sadaļā "Atbalsts ražotāju grupām". Vienotā programmdokumenta ietvaros 2004. gadā LPKS varēja pretendēt uz pasākumiem "Investīcijas lauksaimniecības uzņēmumos" un "Lauku teritoriju pārveidošana un attīstības veicināšana".

3. Zemgales reģiona lauksaimnieku attieksme pret lauksaimniecības kooperatīvajām sabiedrībām

3. Attitude of Farmers of Zemgale Region to Agricultural Cooperatives

Darba gaitā tika veikta Zemgales reģiona (Jelgavas, Bauskas un Dobeles rajoni) zemnieku aptauja ar mērķi noskaidrot viņu attieksmi pret kooperatīvajām sabiedrībām. Tika aptaujāti 100 respondenti.

20% no visiem respondentiem ir kādas kooperatīvās sabiedrības biedri. Pārējie 80% aptaujāto zemnieku nav iesaistījušies kooperatīvo sabiedrību darbībā. No kooperatīvo sabiedrību biedriem 90% kooperatīvā darbojas 1 – 5 gadus. Lielākā daļa aptaujāto kooperatīvu biedru darbojas kooperatīvos, kas savāc un realizē pienu, novāc, uzglabā un realizē rapsi, kā arī kooperatīvos, kas sniedz lauksaimniecības pakalpojumus.

Aptaujas gaitā tika noteikti svarīgākie *iemesli, kas pamudinājuši zemniekus kļūt par kooperatīva biedriem*, tādā veidā noskaidrojot kooperatīvo sabiedrību priekšrocības salīdzinājumā ar saimniekošanu katram individuāli. 70% aptaujāto kooperatīvu biedru kā vienu no iemesliem minējuši iespēju uzglabāt un izdevīgāk realizēt saražoto produkciju, 60% respondentu nozīmīga šķiet iespēja samazināt ražošanas izdevumus, tas ir, lētāk izmantot tehnikas pakalpojumus, lētāk iegādāties izejvielas utt. 30% aptaujāto kooperatīvu biedru kā iemeslu norāda speciālistu pakalpojumu pieejamību, jo bieži vien atsevišķi zemnieki finansiālu iemeslu dēļ nevar atļauties izmantot speciālistu pakalpojumus. 30% respondentu kā vienu no iemesliem min iespēju sadarboties ar citiem zemniekiem, kas ir kooperācijas darbības pamats. Bez tam tiek minēta iespēja vieglāk saņemt finansiālo atbalstu, pieteikties kredītiem, izstrādāt projektus u.c.

80% aptaujāto kooperatīvo sabiedrību biedru uzskata, ka iestāšanās kooperatīvajā sabiedrībā pozitīvi ietekmējusi viņu zemnieku saimniecību darbības rezultātus. 10% respondentu uzskata, ka kļūšana par kooperatīvās sabiedrības biedru saimniecības darbības rezultātus ir ietekmējusi negatīvi, 10% aptaujāto kooperatīvu biedru nesaskata saistību starp dalību kooperatīvā un saimnieciskās darbības rezultātiem.

Ar anketēšanas palīdzību tika noskaidrotas arī *galvenās problēmas, ar ko saskaras kooperatīvās sabiedrības*. 22 respondenti kā galveno problēmu kooperatīvu attīstībā uzskata likumu un citu normatīvo aktu nepilnības. Tas liecina: lai arī kooperatīvo sabiedrību darbību ietekmējošos likumos un citos normatīvajos aktos ir veikti grozījumi, taču vēl arvien pastāv nepilnības, kas kavē kooperatīvo sabiedrību attīstību, piemēram, lielais pamatkapitāla apjoms. 14 respondenti kā vienu no problēmām atzīmējuši pastāvošo nodokļu politiku, tas ir, ka kooperatīvajām sabiedrībām būtu nepieciešamas priekšrocības nodokļu jomā salīdzinājumā ar citām komercdarbības formām, lai būtu stimuls veidot kooperatīvās sabiedrības. 8 aptaujātie zemnieki uzskata, ka problēma, ar kuru saskaras kooperatīvās sabiedrības un kura ietekmē kooperatīva darbību, ir konflikti starp biedriem, tas ir, ne vienmēr biedru intereses sakrīt, turklāt bieži vien atsevišķi cilvēki cenšas izvairīties no kooperatīva biedru pienākumu pildīšanas, taču, saskaņā ar kooperācijas teoriju, kopīgs mērķis ir viens no priekšnoteikumiem veiksmīgai kooperatīvās sabiedrības darbībai. 6 respondenti problēmas saskata finansiālajās grūtībās, ar ko saskaras kooperatīvi, jo, atšķirībā no citām komercdarbības formām, kooperatīvajām sabiedrībām primārais ir nevis peļņas gūšana, bet gan biedru interešu aizsargāšana. Līdz ar to kooperatīvi var saskarties ar finansiālām grūtībām, jo viss ir atkarīgs no biedru iespējām un vēlmes ieguldīt savus līdzekļus kopīgi vadīta uzņēmuma darbībā. No citiem variantiem ir

minēta nenoteiktība no valdes puses un nepietiekams atbalsts no valsts puses. Šā raksta autori uzskata, ka viens no kavēkļiem kooperācijas attīstībā ir arī zemnieku zemais apziņas un kultūras līmenis Latvijā.

Pētījuma autoriem šķita svarīgi noskaidrot *nozīmīgākos iemeslus, kas kavē kļūt par kooperatīvās sabiedrības biedru*. Visbiežāk minētais kavēklis, kas traucē iestāšanos kooperatīvajā sabiedrībā, ir informācijas trūkums par kooperēšanās iespējām. To atzīmējuši 36 respondenti. 30 aptaujāto kooperatīvu biedru kā nozīmīgu iemeslu minējuši bailes zaudēt patstāvību. Tas ļauj secināt, ka latviešu zemnieki labprātāk strādā individuāli. Lai gan viens no iemesliem tam varētu būt nepareizā kooperatīvo sabiedrību darbības izpratne, jo 24 respondenti kā vienu no kavēkļiem ir minējuši faktu, ka viņiem kooperatīvās sabiedrības jēdziens asociējas ar kolhoziem. 6 aptaujāto kooperatīvu biedrus iestāties kooperatīvajā sabiedrībā kavē iestāšanās maksa. 28 respondenti minējuši arī citu variantu, piemēram, ka līdz šim nav bijusi nepieciešamība kļūt par kāda kooperatīva biedru. Tāpat iestāties kavē negatīva iepriekšējā pieredze. Daži zemnieki realizē produkciju bez starpniekiem un tāpēc neizjūt vajadzību kooperēties ar citiem. Viens zemnieks par iemeslu minējis lielo attālumu līdz tuvākajai kooperatīvajai sabiedrībai. Atsevišķi respondenti kā iemeslu minējuši bailes, neuzticēšanos kooperatīvajām sabiedrībām, kā arī uzskatu, ka patlaban kooperatīvajām sabiedrībām vēl ir nepietiekams attīstības līmenis.

Secinājumi, priekšlikumi
Conclusions, Suggestions

1. LPKS analīze Latvijā kopumā liecina par pozitīvām attīstības tendencēm, jo ar katru gadu palielinās gan kooperatīvu biedru skaits, gan apgrozījums.
2. Zemgales reģionā reģistrēti 9% no kopējā kooperatīvo sabiedrību skaita, taču šim skaitam raksturīga tendence katru gadu samazināties.
3. Lai gan kopējais lauksaimniecības NVO un LPKS atbalsta apjoms katru gadu palielinās, tomēr atbalstam tieši kooperatīvajām sabiedrībām piemīt tendence samazināties.
4. Zemgales reģions no 2001. gada līdz 2005. gadam ir saņēmis vislielāko atbalsta summu salīdzinājumā ar citiem reģioniem. Tas noticis galvenokārt tāpēc, ka liels atbalsta apjoms tika saņemts 2005. gadā.
5. Zemgales reģiona zemnieku aptauja liecina:
   - svarīgākais iemesls, kas pamudinājis zemniekus kļūt par kooperatīvu biedriem, ir iespēja uzglabāt un izdevīgāk realizēt saražoto produkciju;
   - 80% kooperatīvu biedru uzskata, ka iestāšanās kooperatīvajā sabiedrībā pozitīvi ietekmējusi zemnieku saimniecību darbības rezultātus;
   - galvenā problēma, ar ko saskaras kooperatīvi, ir likumu un citu normatīvo aktu nepilnības un pastāvošā nodokļu politika, piemēram, lielais pamatkapitāla apjoms;
   - nozīmīgākais iemesls, kas kavē kļūt par kooperatīva biedru, ir informācijas trūkums par kooperēšanās iespējām, kā arī bailes zaudēt patstāvību.

6. Latvijas lauksaimniecības kooperatīvu asociācijai:
   - veicināt sadarbību kooperācijas jautājumos ar pagastu lauksaimniecības konsultantiem, padarot tos par saviem pārstāvjiem atsevišķu pagastu līmenī, kas iepazīstinātu zemniekus ar kooperācijas būtību;
   - rīkot seminārus zemniekiem, kuros informēt par kooperēšanās iespējām, pieejamo atbalstu, jaunāko informāciju, veicināt pieredzes apmaiņu starp jau esošiem veiksmīgiem kooperatīviem un tādiem, kas vēl tikai veidojas;
   - veicināt kooperatīvu sadarbību ar pašvaldībām, dažādām nevalstiskām organizācijām, skolām, piemēram, par kooperatīvu saražotās produkcijas realizācijas iespējām;
   - veicināt vertikālo sadarbību, tas ir, papildinot horizontālo kooperāciju ar saražotās produkcijas pārstrādi un realizāciju tieši patērētājam.

7. Latvijas Republikas Zemkopības ministrijai:
   - attīstīt kooperāciju ne tikai valstiskā, bet arī starptautiskā mērogā – veidot kooperatīvus ar citu valstu ražotājiem. Informēt vietējos ražotājus par šādām sadarbības iespējām, palīdzēt veidot kontaktus;
   - izstrādāt priekšlikumus par nodokļu atvieglojumu piešķiršanu kooperatīviem, kas padarītu tās konkurētspējīgākas, salīdzinot ar citām, uz peļņu orientētām komercdarbības formām.

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SOCIAL CAPITAL IN FARMS OF ZEMGALE

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Abstract

The concept of social capital was analyzed during the research and this paper presents a summary of the theoretical discussion. Two sociological surveys were conducted to explore the presence of social capital and its impact on economic performance in the Zemgale region. The authors found that the development of these farms is influenced by membership in professional associations, unions and nongovernmental organizations as well as in cooperatives. The level of trust and social networks also influence the economic growth of farms. So the process of development is multiplicative in character.

The farms which have social networks and informal activities not only in level of local authorities but also in regional level have a major input in regional growth. One of the ways to increase the social capital in Zemgale and also in Latvia is to create an unified information centre. Strategic guidance of cooperatives and support for the system of lifelong education in rural areas would also have a great effect.

Key words: social capital, farms, development.

Introduction

Human resources with cultural heritage, mentality, psychology and correspondence of those resources to quality standards in modern economy very deeply determine economic performance's structure and effectiveness.

In our National Development Plan 2007-2013 well educated and creative human is brought to the forefront as the main factor of development: "To achieve the high level of living characteristic to societies and individual of highly developed countries our main resource is our population's knowledge and wisdom, its efficient and targeted application."(Nacionālais attīstības plāns 2007-2012, 2006).

This is fact that industrial societies render into information societies in which information, its flows and channels gain a growing importance. There is growing evidence that intellectual capital increasingly influences the effectiveness of the use of traditional resources. Many individuals create society; connections between them are always in process and are based on mutual reciprocity and social networks. This interaction process shows elements of social capital like mutual trust, informal networks, cooperation and cohesion. Social capital has not been explored enough as an object in economical activities and regional development studies in Latvia. Effects that accompany better developed networks, trusting and success of cooperation are still missing in many development researches.

The aim of the research was to clarify the impact of rural entrepreneurs' social capital on rural regions economical performance. Following tasks were set

- analyze the role of social capital in economical activities theoretically and state the most important of main indicators of social capital;
- conduct sociological surveys in rural areas, especially farmers;
- create the model of enhancement of social capital.

All tasks were fulfilled and this paper presents the main results of this research and show main points for further discussions.

Monographic, abstract-logical, statistical and sociological survey methods were used. The hypothesis is that farmers' social capital influences their farm development, and indirectly the regions' development.

The results and discussion

1. Theoretical analysis

Many famous researchers and scientists and philosophers has devoted time to social capital studies both theoretically and empirically: Bourdieu P. (1980, 1986), Castle E. (2002), Coleman J. (1988, 1990), Fukuyama Fr.(1995, 2001, 2002), UKONS (2001), Knack S. (1997), Narayan D. (2001), Putnam R. D. (1993, 1995, 2001), Woolcock M. (2001), Gallois (2005), Hans W. (2003) and many others.

The concept of social capital in literature has very different interpretations, and depends on scientist background and understanding of sociality. That is reason why sometimes there are contradictions between definitions and results of empirical researches. In very broad sense social capital could be defined as social connections in society (Piazza – Georgi, 200.). Social capital consists of all actual or potential resources linked to possession of durable network of more or less institutionalised mutual acquaintance or recognition (Bourdieu, 1986). Social capital is networks, norms and trust, which facilitate to achieve the goal more effectively (Putnam, 2001). In Latvia few scientist also study social capital, nevertheless in quite narrow aspect. Contribution to the study of social capital also led to publications of this paper's authors (Pelše 2003, 2004; Strīķis, Pelše, Leikučs 2004, 2005; Pelše 2006).

Analyzing and evaluating the literature about social capital we made our own interpretation of social capital - as all those goods in mutual relationships that are created in networks of social structures and which influence action of an individual agent (Pelse, 2006).

The summary of theoretical analysis

1. Non-financial resources in economics are going to be an important source of power and influence. Economical growth demands not only successful economical performance but also involvement in social and political activities.
2. Due to increasing complexity of our day's economics there is the need to comprehend new resources of economical development. One of these resources is social capital.
3. In last few years there has been a very rapid increase in the number of researches and publications that more or less are connected with social capital concept. Overall there exist very wide variations in the interpretation and content of this concept.
4. In general it is possible to distinguish two paradigms regarding the concept of social capital – one is neo-Marxist approach, second – neo-Liberal approach. First paradigm emphasizes the access to power and resources needed for successful economical performance, second – social norms and possibilities of agents in free market economies.
5. The elements and manifestations of social capital are trust, reciprocity, and involvement in formal and informal network, cooperation, social norms.

2. The link between social capital and farms economic performance in Zemgale

Zemgale is geographically located in relatively good place – in the middle of the state. There most fertile soils in Latvia are located there and there is quite a high proportion of population who live in rural areas. Education institutions are also gainfully located, for instance, Latvian University of Agriculture in Jelgava. There are wide nets of agricultural management and services in rural areas.

Most significant group of entrepreneurs in Zemgale is farmers, wherewith they are the object of the research.

During research two surveys of the owners of farms in Zemgale (sample of first – 207, second – 196 respondents) were carried out. Variables that show the development level of the farms were:

- used land area (ha); changes in used land area (ha) in last 10 years;
- participating in SAPARD (till May of 2004);
- current economical situation of he farm;
- respondents opinion about their farms viability in the future.

Farmers' social capital indicators were:
- involvement in different social activities;
- cooperation and membership in associations;
- trust in people in general and institutions.

Data were calculated with SPSS. To find any links between variables we used Chi – Square test and p-value approach was used to fix the ties.

The results are quite uncommonly compared to other researches. According to our calculations there is no connection between general and institutional trust of farmers and their economical performance. Nevertheless trust variable is very closely connected to variables of the current financial situation of the farms and farmers' vision about the future.

Summary of the empirical research

1. Farms are the main and most important part of rural entrepreneurship in Zemgale.
2. In our research we find that social capital has connection with the farm's economical performance, especially:
   - membership in professional associations. This can be explained by the fact that farmers can get most important information and build informal networks which helps to create the best strategy for further growth.
   - active membership rural cooperatives. Here exist quite strong tie between membership in cooperative and all indicators of economical performance.
   - Trust level, especially towards institutions, which have in farmers opinion very direct impact on routine work of the farm, like banks, government, as well as Rural Support Service etc.
3. There were variables which showed no correlation with variables of farms' economical performance.

3. The impact of social capital to the farms' development

In our researches we tried to explore the impact of social capital to farms' growth. Development process has multiplicative character. Investments in economy manifest directly and indirectly, first of all as an amount of the money and in more indirect way taking into account social capital. Those indirect investments constitute from networks and trusting, cooperation and cohesion.

Summary

1. The growth indicators of the farms are connected with the spatial structure levels of social capital. In our researches we distinguished four levels of social capital: community, local, regional and interregional level. Those farms which had community or local social capital were less developed than those, which had regional or interregional social capital (Pelse, 2006).
2. Farmers' social capital level determines actually investment process in region. Significant input in regional growth give those farmers, whose social capital (network capability, especially informal activities) works not only on local level but also in regional level. So farms growth and consequently regional growth determines all four levels of social capital.
3. Wide social capital is essential condition for investing in regional development.
4. As most desirable level of farmers' social capital is their involvement in public activities on local, regional and interregional level. Between those indicators and indicators of farms economical performance exist correlations.
5. Farmers participating (both as voter and as candidate for deputy) in elections of local self-government and Saeima are not usable as social capital indicator.

4. Possibilities to support and build farmers' social capital

The analysis of our research shows that development of social capital is important for individual agents, their economical activities and consequently also economics in regional space they are located. Each farmers' activities influence his/her family as well as others who are involved in this business. If farmers' social capital is well developed than it has a positive impact on all workers in the farm; additional financial capital provides the chance to improve human capital, in this way it has a positive effect on regional economics. It is also important to evaluate the potential instruments of social capital enhancement, taking into account target audience, time, situation and territory.

In researches we choose possible scenarios of farmers' social capital enhancement:

- creation of unified information centre;
- strategic guidance of cooperatives;
- supporting the system of lifelong education in rural areas;
- preservation of current situation.

The activity field of those scenarios in fact overrun one region's limits and has far more range.

In order to estimate possible enhancement scenario of social capital and their development perspectives in farms, an hierarchical analysis based on five experts' opinion was carried out. One of the preconditions for choosing experts was that each of them should be an expert in farm activities in different spatial levels.

The hierarchy of evaluation of possible enhancement scenarios of farmers' social capital has three levels:

1. level (problem) – the enhancement of farmer social capital;
2. level – criterion groups (farms, local government, regional, states and EU interests);
3. level – alternative scenarios of social capital enhancement.

As last stage in hierarchical analysis is the calculation of global priorities vector. Global priority as such allows finding most optimal solution of the problem or scenario. It shows coordinates of priority vector anent to the general aim.

The problem – enhancement of farmers' social capital – taking into account five different criterion groups, experts see as most optimal scenario the creation of unified information centre, global priority vector in this case was 0.35. Other scenarios are not mutually exclusive and could be implemented practically simultaneously.

The need for cooperation had second position with 0.30 global vector coordinates, long life education had 0.27. Experts saw the current situation as inimical for enhancement of farmers' social capital. Nevertheless other scenarios also gained quite similar coordinates.

If we look at each expert opinion, then the advantages of creation of one unified information centre as the most optimal scenario is seen by those experts in states and farms priorities, nevertheless the opinion of others experts are quite similar and they relatively highly assessed each of the proposed scenarios. Experts who represent interests of EU and local governments see cooperation as the best scenario to build social capital, but the system of long life education in rural areas has been supported by experts in regional interests. In total the best scenario is supposed to be the creation of the unified information centre (Pelse, 2006).

Researches in clarifying the possibilities to enhance farmers' social capital show that:

1. There were chosen four scenarios of social capital building in Zemgale :
   - creation of unified information centre;
   - strategic guidance of cooperatives;
   - supporting the system of lifelong education in rural areas;
   - preservation of current situation.
2. Each of scenarios mentioned above has its strength, weaknesses, opportunities and threats.
3. Chosen experts suppose the creation of unified information centre as the most optimal scenario in enhancement of farmers' social capital, second best scenario is strategic guidance of cooperatives, and third position has supporting the system of lifelong education for farmers. Mentioned scenarios have quite equal coordinates, and this does not exclude the possibility of their realization at the same time.

Conclusions

1. Today it becomes even more important to study new types economical resources, one of these is social capital. Social capital is all those goods in mutual relationships that are created in networks of social structures and which influence action of individual agent.
2. In Zemgale advantages in enhancement process of farmers' social capital are region's location place, connected with big proportion of region population who live in rural areas, relatively high education level of population and good accessibility of education in the region, relatively good quality of the soil and wide nets of agricultural management and services, which have deep historical roots in region's economics.
3. We state that in Zemgale farmer's social capital has impact on his economical performance, because there is strong correlation between farms' development variables and these variables of social capital:
   3.1. farmers involvement in professional associations, unions and different societal organizations;
   3.2. membership in agricultural cooperatives;
   3.3. institutional trust.
4. The major input in regional growth gives those farms which have social networks and informal social activities not only in level of local authority but also in regional level.
5. One of the best scenarios to support and build farmers' social capital in Zemgale is the creation of unified information centre. Nevertheless there are also two other scenarios which win quite equal support from experts, e.g.,
   - strategic guidance of cooperatives;
   - supporting the system of lifelong education in rural areas.

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PROMOTION OF NEW LOCAL BRAND – THE ROLE OF INFORMATION

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Abstract

In Poland, as many other countries in Central and Eastern Europe, the countryside has experienced various new problems, unemployment being one of the many symptoms. Encouraging local work and business is often a goal aimed at by local authorities, though these opportunities are generally infrequent. So any enterprise that is doing well is good news, especially those prepared by organisations independent from local authorities. In this article two projects conducted in rural areas by nongovernmental organisations (NGO) are examined; one connected with the revival of an antique park, second - the creation of a new brand of honey. Both these examples required the establishment of a new brand and the next, the galvanizing of the public into visiting those places directly connected with the new brands, and as a goal and for the future, could prompt those in the local community to set up their own business or initiate employment opportunities. Regarding these matters, the aim of this paper is to indicate what kind of promotion is the most effective to bring about success and which will have the greatest influence on the general public's knowledge of these new brands. The effectiveness of the promotion of these products was also checked (by a sounding), where people were asked about the amount of information they know about the products/project in question.

Key words: rural areas, local product, nongovernmental organisation, Poland.

Introduction

Over the last few years a growing interest in local goods and produce has been noted (Jones P., Comfort D., Hillier D., 2004). So we can be sure that there will be more new local products on the market; some new, some older forgotten products revived as interest grows. From a marketing point of view two kinds of new goods can be separated: completely new products and those newly marketed. The first appears when a given product/service is sold for the first time and has never been sold before. The brothers Montgolfier were this position in 1782, when they filled a balloon with air, Lewis Edison Waterman in 1884, when the fountain pen was created, and Sony Corp. in 1979 when the first walkman was introduced.

A market novelty is something new, but only in a given area and only for certain people. It doesn't matter who was the creator or when it was created, what is essential is that the product can be sold here and now and is something new for the inhabitants of a particular area. So not the technological but the marketing aspect of a novelty is emphasized. So, if a given group perceive a local brand as new, it is as new.

The main goal of this article is an attempt to show how to promote a new local brand – connected with rural areas - in an efficient way. The answer to this question can be found in the analysis of two projects, the aim of which was the creation of these local brands. On this basis the author wishes to endeavor to point out some dependence between the ways of spreading information and conducting new brand knowledge. Apart from this goal, the next is the verification of an assumption that during new brand promotion, proper market segmentation and the composition of a particular offer is essential. To realize this two goals in this paper the following tasks will be conducted 1) analysis of promotion carried out on the market and 2) study how this promotion is received by the society. These tasks will be achieved by documental research and by canvassing people's opinion.

In the case of regional local goods or services in connection with an existing area, it is difficult to discuss the distribution to new markets, because they are produced from local raw materials and are associated with local sources. A local product can be described as an article (or service) the local community identifies with, produced in an environmental friendly way and not a mass product. It is assumed that to

generate these goods locally, natural materials are used, giving them their uniqueness. So local produce can be connected with such regional hallmarks as natural attractions (climate), buildings (castles, palaces with cellars, crypts), culture attributes (religion, tradition) or the local style of life. Thanks to proper promotion, local produce can become a visiting-card for a region, and can have an influence on local initiatives (Galek O., 2004). Therefore it seems to be proper to promote these kinds of goods with a greater emphasis on the dissemination of information rather than other marketing tools.

In order to effectively promote local goods, one should provide a verbal or/and graphic symbol or logo, enabling the recognition of the product from its competitors. The rational as well as emotional aspects of a brand are very important when thinking about a logo. It is worth mentioning that at the initial stages of brand life the most important is information connected with the emotions rather than the practical aspects, such as price (Mattila A.S., 1999), therefore information about a new brand ought to relate to the exceptional place of origin, special production methods or outstanding packaging.

As already mentioned, for years it is obvious that marketing can create new brands in effective ways (Tindall J.R., 1991). To be successful, a brand should consist of an original logo as well as a suitable name (Rooney J.A., 1995), to enable effective promotion. It should be remembered that the success of a promotion is connected with the consumer's behavior (their reaction to the offer) and the producer's knowledge of the demand and permanent research of market needs to respond in suitable ways (Dabrowska A., Janos-Kreslo M. 2006). It is also worth considering that people buy goods under positive or negative motivation. The negative is when a purchase is to solve current or future problems; the positive is when buying is connected with intellectual development, appealing to the senses, receiving approval of environmental care. So it seems buying local goods applies to both of these situations, when looking for approval, individuals can join others who are ecologically aware; or problem solving, they can search for natural products, as well as places that have a good influence on their health. In accordance with marketing theory, promotion is a multi-sided tool, consisting of advertising, public relations, fairs and exhibitions, sponsoring, merchandising, personal sales and additional promotion. Each tool is related to the spreading of and, of course, with the gathering of information. In the case of new products, advertising is very important but, due to the cost, unattainable as a marketing tool for local brand promotion. So brands creators have to focus on alternative possibilities, i.e. public relations and personal sales.

When offering new goods on the market, the producer, not only fulfils a concrete demand, but also shapes it, and from this point of view cannot afford to forget about the appropriate broadcast and display of information. Information is called the "gold of the 20th century" because it is the most valuable in any organization, more even than the power of money (Dabrowska A., Janos-Kreslo M., 2006). This can usually be defined from the perspective of an organization, so from the standpoint of a company looking for necessary data, vital to reach their goals. For this reason manufacturers collect information into a database, and this information then has a marketing character (Šmid W., 2000). A statement can be made that; **information is a gauge of the growing knowledge about something** (Dowgiallo Z., 1996), and it is in this sense that it will be used in this paper. It is worth being aware that when it is said that companies run risks when they do business in a market, then it is also equally important to say that clients also run a risk when buying goods or services. Accurate information in both cases lowers the danger of loss.

In all actions concerning promotion, information connected to persuasion plays a key role (convincing, pointing profits). Prospective clients can gain information from merchants as well as from the company's environment (the media or competitors). All information accessible in a market can be divided up into four groups:

- impersonal and commercial - from books and other written forms, advertisements and the Internet, etc;
- personal and commercial - information gathered directly from workers, e.g., salesmen and other individuals in contact with buyers;
- impersonal and noncommercial - information emanating from branch organizations and state or local authorities or other, opinion-forming organizations (i.e. worker or consumer organizations);
- personal and noncommercial - this kind of information can be gleaned from experts, well-known manufacturers, and stars such as actors, all praising the product or organization.

From the average consumer's point of view, the cohesion of all of the aforementioned information is very important, it cannot be incompatible because this will cause a dissonance that will not attract prospective clients toward the decision to buy (Bienstock C., 2002).

The most desirable situation is when all the necessary information is available before the sale and is

easy to verify and evaluate. A much less profitable situation is when information is unclear and gained after purchase. But it should be noted that even a well prepared offer may be unintelligible because of the repeated illiteracy of clients, subjective assessments coming from the client's own expectations and wishes or from incompetent information conversion (Karwowski J., 1999). Accordingly, there is no clear way to ascertain when and in what form the effects of a promotional campaign will appear.

Research and methodology

The empirical section of this paper is: 1) analysis of promotion of two projects connected with local brand creation; 2) canvass research to check the knowledge of two new brands, and the effectiveness of the shared information.

Canvassing was done in December 2006 among the population living in Szczecin; they were asked about any information about a given place/brand and the possibility of explaining where this place/brand was located. The research spoke to 272 people, among which, some were city inhabitants as well as others living in other parts of the West Pomeranian province.

The empirical research was compared with data connected to ways of project informing and the effects directed to the community, for that reason it was possible to collate a scope of conducted activities with the knowledge that the canvassed groups gave.

As earlier mentioned, a theoretical basis of consideration were the final reports of completed projects. First was the **"Revitalization of the Valley of Love Nature Park,"** project, which was started on 1st of March 2005. Its creator, the Green Federation GAJA, planned partnerships with the Gmina of Chojna Authority, The Provincial Conservator of Nature, the Provincial Conservator of Monuments, the Regional Board of State Forests, the Board of United Landscape Parks of the Lower Odra Valley and the inhabitants of the Zaton Dolna and Krajnik Gorny villages, that would begin a revival, that would bring the park back to its former glory. Nowadays the Valley of Love is a remnant of a 80 ha (197.7 acres) area. It was settled by a German family in 1850 called the von Humberts. It is located on the Odra River, around Zaton Dolna and Krajnik Gorny, on moraine hills (reaching 99 m above sea level). From a natural point of view it is possible to view a superb panorama of the Odra River and the German town of Szwedt, on the west side of the river.

In talking over the project there were three main goals and four lesser aims. The general goals were: 1) improvement of the economic situation in the cross-border area through a greater influx of tourists or visitors of around 4%; 2) protection and change to improve the condition of the local environment including the conservation of exceptional plants; 3) galvanising of local activity, relating to sustainable development and local resources. The less important aims were connected to the renewal of material cultural symbols in the Valley of Love, to initiate and develop relationships between different organisations (including local government), the revival of an area important to the neighbourhood and the whole province, to create a website showing the Valley of Love Park and to establish three agro-tourist farms in the vicinity. The project completion date was set at 28th of February 2006.

Any work would not take place without sponsors, of which the most important were Euroregion Pomerania which exercised control over the PHARE CBC fund, The Provincial Nature Protection and Water Management Fund in Szczecin and the UNDP, a Fund for the Global Environment. Jointly, the costs of the project came to 114,560 euro, from which 80% was contributed from PHARE CBC and 20% from state funds. The most important activity is shown in table 1.

The next project that was followed was; **"Honey Moon – A Regional Programme for the District of Pojezierze Drawskie"**, completed by Supporting Development Association of Western Pomerania SZCZECIN-EXPO and the Swimming Collegium in Szczecin. Co-partners, among others, were the Provincial Fund for Nature Protection in Szczecin, The Provincial Nature Protection and Water Management Fund in Szczecin , The Teacher's Centre for Advice and Improvement in Szczecin, the local government in Drawsko, the city and gmina halls in Czaplinek and Złocieniec, The Union of Gminas and Powiats of Pojezierze Drawskie District, Regional History Society in Czaplinek and the Agricultural University of Szczecin.

It is worth adding that the Pojezierze Drawskie District (with an area of 410 km^2) consists of more than 250 lakes situated in the central part of West Pomerania Pojezierze. Within this territory are twelve nature reserves, meaning it is a pollution free area and a non industrialized region, only linked with active rest and tourism.

Table 1

The most important action undertaken in the "Valley of Love" project

Lp.	Event	Time
1.	Working meeting with institution representatives interested	March 2005 Chojna
2.	Tender for preparing documents	April 2005
3.	Polish-German conference about the revival of the Valley of Love Park	June 2005
4.	Professional agro tourist training for the inhabitants of Zaton Dolna	August, September 2005
5.	Benches, bins, parasols, barriers etc, installed in park	August 2005
6.	Opening of website www.dolinamilosci.pl; official park opening ceremony	September 2005
7.	A trip to park for the local media Radio program about the Valley of Love	September 2005
8.	9000 leaflets printed about the valley in German and in Polish	October 2005
9.	Completion of the experts' work and specification reception	December 2005
10.	A summing up conference; Promotional materials production (postcards, mugs, linen bags, thermos bottles)	February 2006 Chojna

Source: Own study based on final project report.

The programme started in the spring of 2002 with active promotion. The main project goal was the creation of a local brand or product coming from the Pojezierze Drawskie District. Work was supported by analysis, questions like; what joins people in this region? What names or images are associated with it? Which should be chosen to create a new image or brand? It was decided that the new brand would be connected with honey. To work on the complete project, Anna Turkiewicz`s advertising agency was engaged. The most essential events are showed in tab. 2.

Table 2

The most important actions undertaken in the "Honey Moon" project

No.	Event	Time
1.	Initial originator meeting	January 2002 Czaplinek
2.	Teacher meeting	March 2002 Czaplinek
3.	Press conference	April 2002 Szczecin
4.	Appointments with school head teachers and teachers; Offers and promotional materials published	From April 2002
5.	Working meeting "Regional brands – how to connect our efforts?"	May 2002 Warszawa
6.	Radio programme spotlighting the project; Methodology meeting for teachers	May 2002 Szczecin
7.	Drahimski Trade Fair	October 2002 Czaplinek
8.	Day trips for children	From May 2002
9.	The finale of children's contest - Turzyn Shopping Centre	November 2002
10.	Scientific conference "The marketing of local products"	March 2003

Source: Own study based on SZCZECIN-EXPO data.

Planned events were begun with the consideration of the name of the brand, the name "Drahim Honey" was chosen, because the word 'Drahim' comes from name of a very old village and this name is not reflected (i.e. free from connotation) in peoples' minds and has a very attractive sound to it. A plan of

promotion took three years, and began with the spreading of information that the region of Pojezierze Drawskie is synonymous with bee-keeping. Beginning in 2002, all events were directed towards key target groups: children and the young (being taken on trips to the honey region), to teachers and to the inhabitants of the larger conurbations, such as Szczecin or Stargard, that are neighboring Pojezierze Drawskie. It extremely essential, that non-profit events could be modified into commercial, money-making activity and is still conducted as a proposal for schools. Nowadays Collegium, affiliated with the project from its beginnings, is the main coordinator. Trips for children and the young to Czaplinek and the other locations mentioned earlier are paid for, amounting to 68zl for one participant, this covers traveling costs, local attractions, a guide and materials that can be taken home. When a group consists of 45 participants, then the enterprise makes about 700 zl of profit; when made up of 20 visitors, the organizer loses around 134 zl. Income providing was vital in this case, because managers had to collect a large sum of money for the first stage of the project, from 378,000 zl (94,500 euro) Association SZCZECIN-EXPO had to add only 305,000 zl; only small part (73,000 zl, 18 250 euro) was taken as a grant from the Provincial Fund of Nature Protection and Water Management in Szczecin. The money was spent on professional training, printed materials for teachers and pupils, salaries for guides, awards for contest winners, insurance, advertising, children's meals, management and the designing of new honey packaging with a logo and brand name by the advertising agency (fig. 1).

Figure 1. Drahim Honey pots, created though the project

Source: Association SZCZECIN-EXPO.

On a basis of these projects it was researched if these planned events were efficient and could have an influence on improving the difficult current situation of rural areas that they were connected to. Because both projects if we assume that there was a growing interest of people living in urban areas after these projects, then by a method of canvassing, 272 people in Szczecin in December 2006 were asked if they knew either the 'Drahim Honey' brand or of the 'Valley of Love'. In this way a verification of campaign information effectiveness could be gauged.

Results

Question 1 – Have you ever heard of the Valley of Love? Answering if the individual had any knowledge of the Valley of Love, only 8.5% of respondents said that they knew something about it (23 persons), but from those asked, only 4 individuals had a real knowledge of this subject, that being only 1.5% of those who answered (fig. 2). Those remaining thought the Valley of Love as a place in the USA or a imaginary place from literature.

According to a very small percentage of positive answers it is difficult to point any connection between promotional work carried out from project and the respondents` knowledge, because only two people knew of Valley of Love due to the fact that they used to live nearby, one had been there on the trip and another had heard about the Valley from someone close to them.

Question 2 – Have you ever heard of Drahim Honey? Among 272 respondents, 46 people answered that they had heard of Drahim Honey. From this group some answers were rejected because of no connection with the honey (I have heard something but I do not know anything), instead 21 answers were acknowledged (7.7%, from this part was rejected again because of incorrect associations). Finally only 15

answers were accepted as confirming real knowledge about the questioned brand (5.5% of respondents), shown in fig. 3.

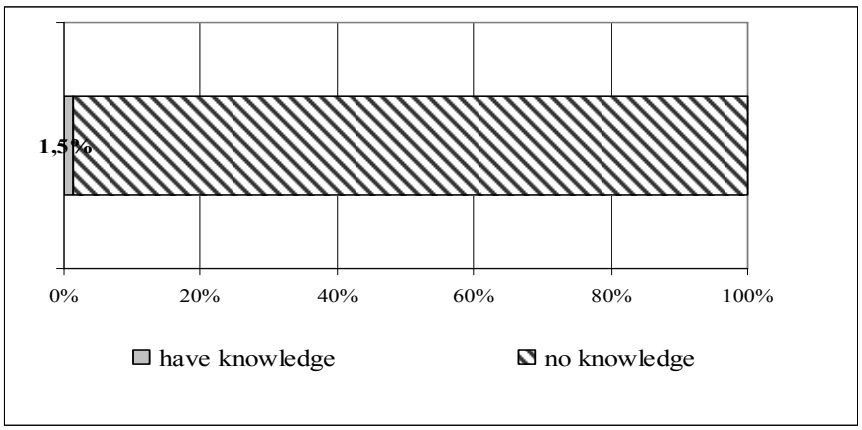

Figure 2. Have you ever heard of the Valley of Love and can you say where it is?

Source: Own study.

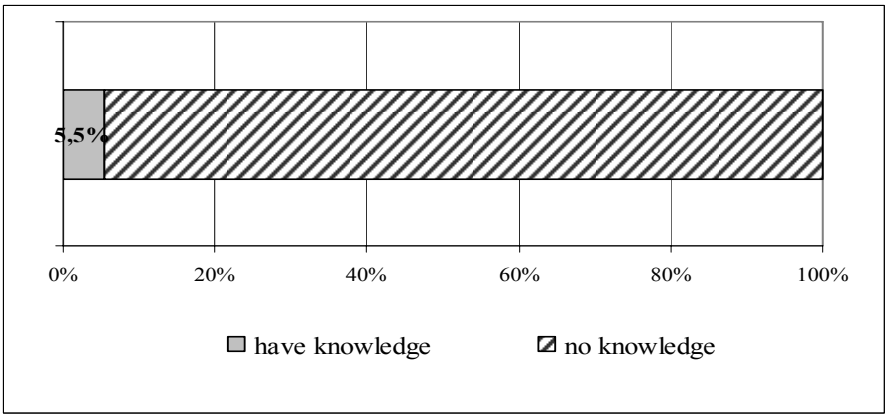

Figure 3. Have you ever heard about Drahim Honey and can you say where it comes from?

Source: Own study.

A comparison of the number of correct answers dependent on respondent age (according to both brands) shows fig. 4.

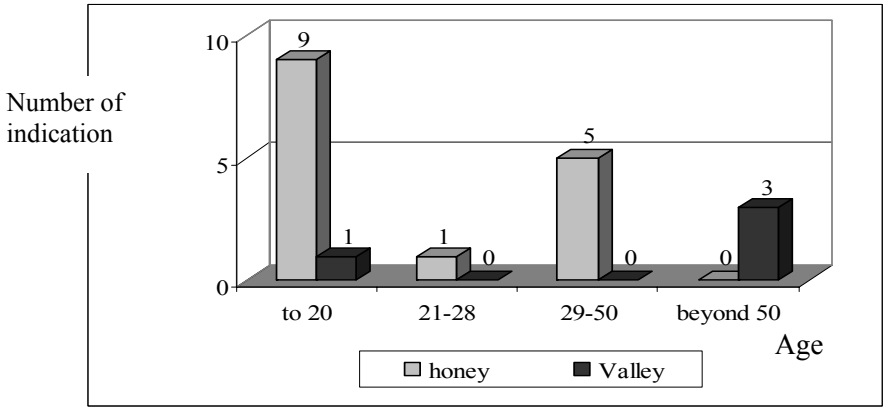

Figure 4. Number of correct indications for Drahim Honey and Valley of Love; according to age

Source: Own study.

The first clear results are that the declaration of whether the respondents had heard about the given place or product are far higher than the true facts. A real knowledge about the origin of Drahim Honey was held mostly by children, and in all likelihood their parents (age 30-40). In reference to the Valley of Love, any knowledge of this place is slight because the only individuals who knew anything of this place actually lived nearby.

Discussion

There are a great number of areas in Poland, that are a great distance from investment centers and ignored by investors (Foley P., Hutchinson J., Kondej A., Mueller J., 1996). We can count the Drawski Powiat and Szczecinecki Powiat areas among them, in part at least, (where Pojezierze Drawskie is located) and Gryfiński Powiat (the location of the Valley of Love). The aforementioned regions are very specific, mainly because of unemployment that comes to 40%. So, every galvanizing initiative form to help the local community is greatly needed. In this aspect should promotional events, and acts, be considered, able to influence the current situation? Assuming that this statement is true, that today tourists may change their expectations from 3S's (sun, sand & sea) towards 3E's (excitement, entertainment & education) and we can be sure that new places or new local products ideas will find a loyal following (Lacwik A., 2004), so the only problem is proper information and recommendation. After comparing promotion actions of the two projects it can be said that they differ in five key areas: in "Drahim Honey Project" there were organised: meetings with teachers and directors of schools, trade fair, child and youth excursions and contests with awards whilst in "Valley of Love Project" there was Internet web page. Taking into consideration that among the respondents only 1.5% has knowledge about Valley of Love when 5.5% knows Drahim Honey, one can assume that promotional events in the latter's case were more efficient. Certain importance should placed on time period, as the honey project has been running from 2002, while the Valley of Love project only from 2005, however it is well known that successful local brand promotion is the best way to involve people in taking part in a more personal way. Moreover it is very important to direct an offer to a clearly defined group of people, which seemed sadly lacking in the Valley project. With this in mind it may be better to offer the valley of Love to an older segment, who have a greater interest in peace and a nice natural place.

It now seems clear that marketing can create new brands efficiently (Rooney J.A., 1995), but a proposition has to be prepared for the particular requirements of consumers. Many are of an avowed opinion that the Internet has taken over as the premier promotion channel (Addyman T., 1994; Lennon D., 1999), seems not to hold up in our examples, because, according to our conducted analysis, the respondents did not utilize the Internet as any important source of information, however if one typed the phrase "*miód drahimski"* or "*Dolina Miłości"* there were from 256 to 286 different links found. Thus one can state that, in the case of local products, if we think about the efficiency of promotion and the reception of information, a good offer to a focused group resulted in personally engaged decision. As already mentioned, local brands can be connected with extraordinary services, place and product. Farmers running an agribusiness can create their own offers in such a way as to maximize the use of unusual hallmarks or landmarks of a given area (Font X., Tapper R., Cochrane J., 2006). So it seems to be possible to create new local brand attached to tourist services as well as products, where marketing can offer support to potential entrepreneurs.

Conclusion

In Poland each part of the country has specific local products, many even known abroad (sheep's cheese, fish, vegetables and handicraft goods). Only the West Pomerania Region is a problematical area, that for centuries underwent much historical and political turmoil, and now to be honest, has no clear cultural identity. But rural regions are an unfailing source of local products/services, so one can utilize those that exist at the present time or even create something new. Two projects that were examined in this paper contained both traditional elements and fresh ideas. On basis of the conducted analysis and canvassing research one can say that according to the information and promotion, these projects clearly differ from each other in their target audience, in the case of the Valley of Love, this group was not clearly defined, while in the case of Drahim Honey it was identified as teachers and pupils, for whom the project was prepared. Results of polling show that it was successful attempt towards success, because now four times more people are aware of Drahim Honey in comparison to the Valley of Love. But to

clear up any misconceptions clarification should be made that: 1) it is easier to promote a product distributable like honey; 2) The Drahim Honey project ran for a much longer period. Notwithstanding these facts it seems that in promotion related to local brands, one ought to place more emphasis on a clear campaign to a clearly defined group of people. Particular attention should be also taken to find efficient ways of spreading the information about the place/product, because people will only enjoy any new items if they are informed about it and know where to find it.

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TRENDS IN THE DEMAND FOR FOODS OF VEGETABLE ORIGIN IN POLAND

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Abstract

The diversity of consumer needs and expectations has started to interest agricultural producers, food processing companies, retail trade and catering companies. The consumers' preferences lead to the evolution of company activity, which is manifested in stronger co-operation and business ties, as well as strict quality control throughout the food marketing chain. To stress these dependencies, the term "consumer-driven agriculture" is used in literature; this means recognition of the consumers' leading role in controlling the development of agriculture and of the entire food marketing system.

Modern society is growing ever richer and older, better-educated and more differentiated in terms of culture or even nationality. These demographic changes will intensify in the future, leading to changes in the demand for food and agricultural products. The consumers will increase the demand for new products, new packaging, greater convenience, new supply systems, and safer as well as more organic food.

The study discusses changes in the consumption of basic agricultural products in Poland. The analysis includes the role of products of vegetable origin in the household consumption expenses, and the impact of economic and demographic factors on consumption of such products by households. The study is based on data from the Household Budget Survey of the Central Statistical Office.

Keywords: vegetable products, food consumption,

Introduction

Making purchase decisions in the food market, consumers choose products that are best suited to meet their needs and wishes. Considering the fact that such decisions condition the development of the entire food production and sales system, it is important to understand the nature of such consumer preferences.

Food consumption is conditioned upon socio-economic transformations, such as urbanisation, education, income level, technology, lifestyle changes. In rich and highly urbanised societies, food consumers buy much more than just the physical farm product. To an ever greater extent, food is purchased for satisfaction rather than to meet physiological needs.

The nature of consumer needs and preferences was examined within numerous research projects in Poland and internationally. A survey conducted by Brouwer et al. (2001) indicates that the demand of European consumers is shifting towards higher quality foodstuffs at higher levels of processing, that is towards larger ranges of convenience products. The researchers additionally stress that consumers are more and more conscious of food safety issues, environmental balance and ethically acceptable production methods. Food processing companies and retailers adapt to such preferences by implementing quality control systems along the entire food chain, and enforcing the observance by farmers of special cultivation regimes. The authors stress that the discussed consumer preferences result from higher income levels.

Other authors also point to the food quality issue. A Polish research project reveals the growing importance of quality in the food market. Górska-Warsewicz (2005) stresses that in the situation of growing market competition, quality is among the basic factors in the process of deciding whether or not to buy a food product.

An important area of research into the demand for foodstuffs is the analysis of the impact of changing income levels on food purchases. In their project, Golubicka et al. (2006) focus on identification of the impact of income on food consumption levels in Poland. The authors discovered a clear relation between higher income and reduced consumption of bread, flour, potatoes and margarine. There is also a slight increase in sugar consumption, a moderate increase in the consumption of rice and vegetable oils, and a particularly distinct growth in exotic fruits, fruit and vegetable juices as well as potato products.

Differentiation is still a typical feature of the demand for food. It can manifest itself on a variety of planes: by regions, household types, consumer places of residence. Larson (1998) showed a very clear regional differentiation in the demand for food in the United States. Having examined 126 product categories in 54 markets, he identified 11 different food markets in the USA.

Numerous surveys show significant demand differences in individual countries and between such countries. Gracia (2001) stresses that EU consumers are involved in the integration processes which control the phenomenon of homogenisation of the European model of consumption. Despite specific standardisation of European consumers, food market conditions lead to significant differences in food consumption between individual EU countries. Borowska (2002) identifies several consumption models in Europe (Scandinavian, Central-European, Isles-specific, and Mediterranean) with respect to basic vegetable products. However, in the conclusions of her project she stresses that it would be difficult to explicitly select from among those models which one Polish food consumption level and structure is most similar to.

Gil's research (1995) into the relation between consumption and economic development of 16 EU countries reveals specific assimilation trends in the individual countries' preferences. Yet according to the author, the concept of a Euro-consumer would be unfounded, as local differentiation of food consumption patterns continues.

Cromartie (2002) identifies changes in the characteristics and behaviour patterns of American consumers. They include a rapid change in the demographic profile, especially in terms of age and ethnic origin; generally slow population growth; growing participation of women in employment; and changes in working hours. Against this background, Blisard et al. (2002) identify numerous effects of such changes on the level and structure of demand for foodstuffs. They suggest that the effects might be divided into two components – changes in the quantity of food purchased, and changed quality preferences. The latter authors' study indicates that higher income leads to intensified purchases of more expensive and fresher foodstuffs, at higher levels of processing and consumed away from the home. According to the authors, future consumers are likely to pay greater attention to the quality rather than the quantity of food. Growing real income will lead to increased spending on fruits and vegetables and on highly processed foods, including those consumed away from the home.

Many surveys identify the development of new food markets. Organic and functional food can be mentioned here. Gutkowska et al. (2002) stress that the organic food market is among the most dynamic segments of the EU food market. They suggest that organic farming products may become an important segment of the consumer-oriented food market if consumers base their purchase decisions on health, environmental, social and ethical aspects, and thus represent "responsible consumption".

The concept of functional food is derived from Oriental cultures, which tend to assume that food should at the same time provide a cure. In recent years, functional food has started to score significant successes also in the USA, Japan and other developed countries, including in Europe.

Functional food includes foodstuffs and drinks with scientifically proven beneficial effect on human health (Czerwonogrodzka, 2005). Castellini et al. (2002) stress in their study that the functional food market has been growing much more dynamically in Europe than the remaining food market sectors.

The study discusses changes in the consumption of basic agricultural products in Poland. The analysis includes the role of products of vegetable origin in the household consumption expenses, and the impact of economic and demographic factors on consumption of such products by households. The study is based on data from the Household Budget Survey of the Central Statistical Office.

Directions of changes in the consumption of vegetable products

The income and economic situation of households are important factors influencing food consumption patterns. The demand for food in Poland – as in other countries – is evolving. The changes pertain both to the level and to the structure of consumption. With socio-economic development, the position of foodstuffs in the consumer expenditure structure of households changes. Table 1 shows the dynamics of income and consumer spending of Polish households in 1995-2004. From the data it follows that in the period under analysis, the growth dynamics of household income and expenditure was clearly ahead of changes in the prices of consumer goods. The expenditure on food, most groups of foodstuffs of vegetable origin included, showed different trends than total expenditure. For all such groups except cereal products, the dynamics of expenditure was below that of the prices of consumer goods.

Table 1

Average monthly household income and expenditure in PLN per household member

Measurement	1995	2000	2004	2000/1995	2004/2000
Available income	300.6	610.5	735.4	203	120
Total spending	276.3	599.5	694.7	217	116
Foodstuffs	109.7	172.4	181.4	157	105
Cereal products	13.2	29.6	31.6	225	107
Potatoes	4.9	5.1	4.03	105	79
Vegetables	8.4	15.1	16.0	181	106
Fruits	6.4	11.1	10.77	174	97
Vegetable fats	4.3	5.2	5.1	123	98
Sugar and confectionery	7.0	11.7	12.69	168	109
Consumer goods and services price index				182	112

Source: Own calculations from data of Household Budgets 1996, 2000, 2004. Main Statistical Office

As follows from the data of the Household Budgets survey, the contribution of expenditure on food to overall household expenditure went down from 39.7% in 1995 to 26.1% in 2004. Despite this significant drop, the position of food in the structure of Polish households' consumption expenditure is still rather strong compared to other countries. Over the years concerned, the structure of expenditure on food changed. There was a highly marked increase in the proportion of vegetable products among all food purchases – from 40.1% in 1995 to 44.2 % in 2004. Also, the structure of such purchases was transformed. Figure 1 shows changes in the structure of expenditure on vegetable products from 1995 to 2004. The data reflects a distinct growth in the importance of cereal products in the consumption structure, and a parallel distinct drop with respect to potatoes and vegetable fats. Changes in the contribution of the other products to consumption expenditure were much less marked.

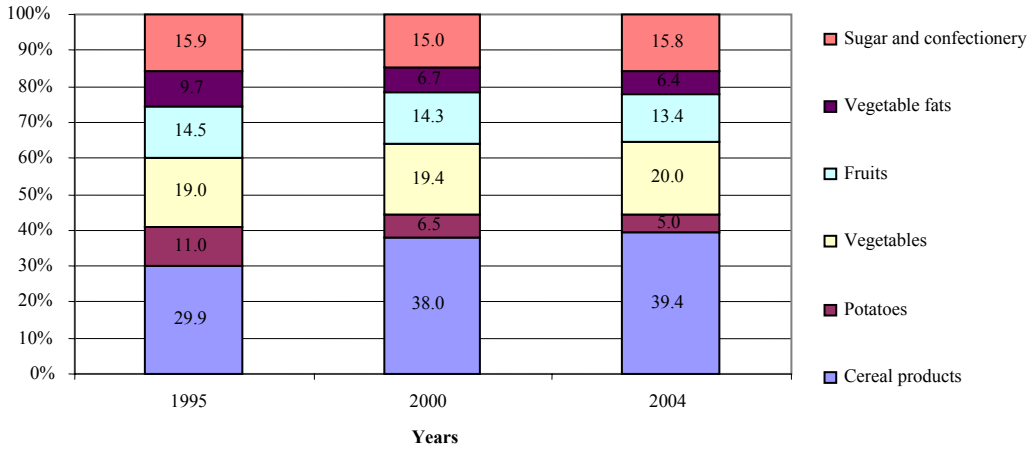


Figure 1. The structure of household expenditure on vegetable products

Source: See Table 1.

Table 2 contains a quantitative presentation of changes in the consumption of vegetable products, and shows an increase over the 1995 – 2004 period of highly processed cereal products (macaroni, pastry) as well as fruits, particularly exotic fruits. In contrast, there was a drop in the general consumption of the less processed cereal products, flour and bread included, of vegetables and vegetable preserves, and also of sugar, confectionery and fruit preserves.

The expenditure on and consumption of vegetable product is highly differentiated by household types. Based on socio-economic criteria, the Main Statistical Office GUS divides households into 6 types. Figure 2 shows the differentiation of consumption of vegetable products by the different types of households. As follows from the data, households can be divided into two groups by the vegetable product consumption

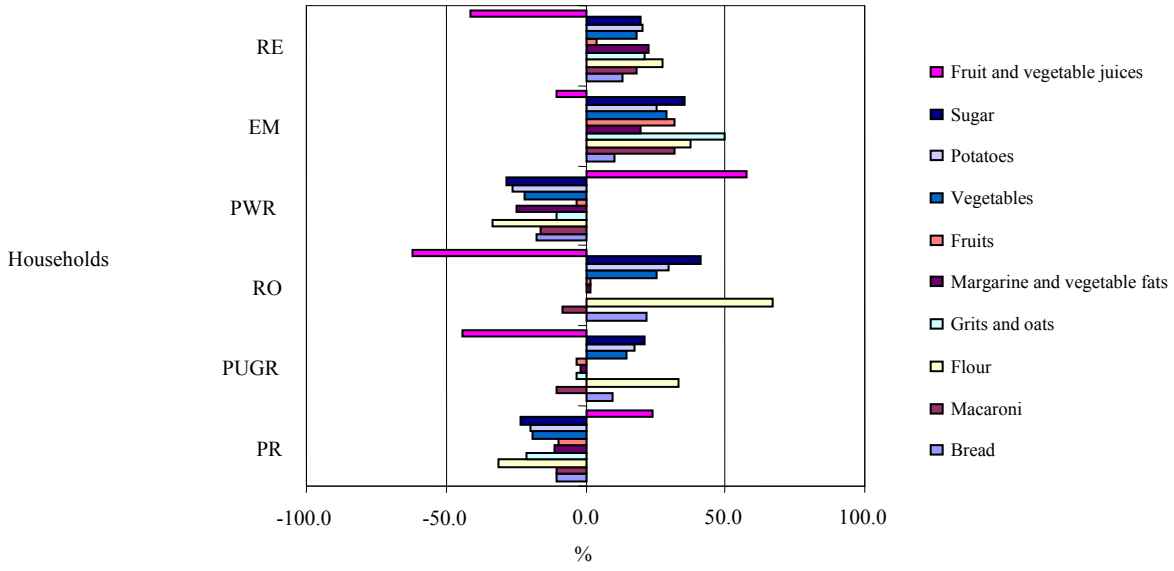
model. The first group includes households of employees and self-employed persons, where consumption of vegetable products is clearly lower compared to the average for Polish households. The other group of households includes those with above average consumption of vegetable products. These are the households of farmers and farm employees and of recipients of old-age and disability pensions.

Table 2

Monthly household consumption of selected vegetable products in kg per household member

Vegetable products	1995	2000	2004	2004/1995
Bread and cereal products	9.80	9.17	8.68	89
Rice	0.23	0.22	0.23	100
Bread	7.48	6.61	6.08	81
Macaroni	0.26	0.32	0.38	146
Flour	1.35	1.2	1.09	81
Pastry	0.21	0.52	0.59	281
Cereals and oats	0.28	0.26	0.28	100
Oils and other fats	1.59	1.56	1.57	99
Vegetable fats	1.00	1.01	1.02	102
Fruit	3.70	4.10	3.91	106
Fresh fruit	3.42	4.02	3.82	112
Exotic fruits	0.68	0.91	0.77	113
Apples	1.69	1.91	1.74	103
Berries	0.48	0.45	0.51	106
Fruit preserves	0.28	0.08	0.09	32
Vegetables	14.61	13.27	12.33	84
Potatoes	8.73	7.82	6.91	79
Fresh vegetables and mushrooms	5.13	4.94	4.97	97
Vegetable and mushroom preserves	0.67	0.42	0.37	55
Sugar	1.96	1.8	1.62	83
Confectionery	0.42	0.19	0.19	45

Source: Household Budgets 1995, 2000, 2004, Main Statistical Office



Households of: PR – employees, PUGR – farm employees, RO- farmers, PWR – self-employed persons, EM – retired persons, RE – recipients of disability pension

Figure 2. Differentiation of consumption of vegetable products in households in 2004

Source: Own calculations from data contained in Statistical Yearbook, Main Statistical Office 2005

Household structure is an important factor shaping the consumption of vegetable products. As follows from the data shown in Figure 3, larger households consume smaller proportions of vegetable products.

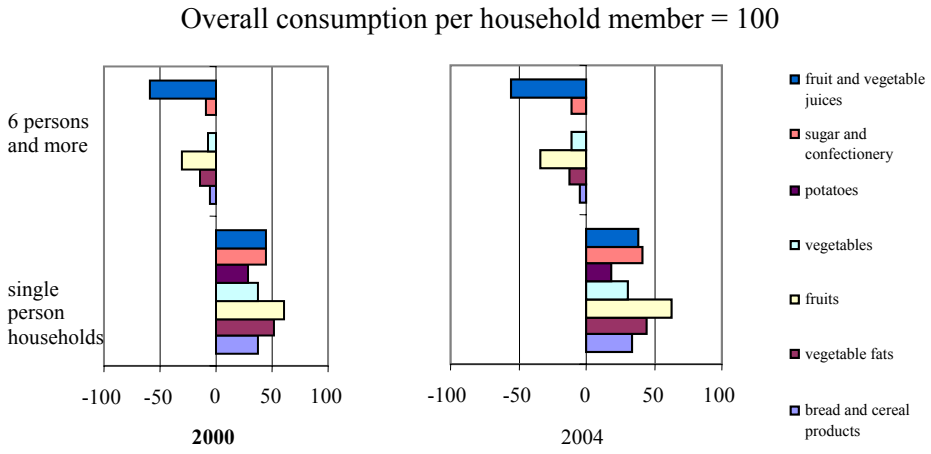


Figure 3. Consumption of vegetable products in single person households compared to households with at least 6 members in 2000 and 2004

Source: Own calculations from data of Household Budgets 2000 and 2004, Main Statistical Office

In single person households, the average consumption of vegetable products is higher than the average consumption per household member in all households. The difference is particularly marked with respect to fruits and vegetable fats.

Conclusions and recommendations

Foodstuffs of vegetable origin are a greatly differentiated group of food products, which includes highly processed products as well as those consumed without processing. From the present analysis it follows that the contribution of vegetable products to the overall consumption expenditure of Polish households is growing. The dropping proportion of overall food purchases is accompanied by a clear growth in the purchases of vegetable products.

Surveys show a positive dependence between income changes and food consumption, vegetable products included. With growing income, the consumption of exotic fruits, fruit and vegetable juices as well as potato products goes up, while that of bread, flour and unprocessed potatoes decreases.

Per capita consumption of vegetable based foodstuffs is smaller in larger households. In single person households that consumption is definitely greater than the overall household average.

Significantly different models of consumption of vegetable products can also be found in the different socio-economic groups of households. Consumption is above the average in the families of farmers and recipients of old-age and disability pensions. The remaining household types consume a much smaller proportion of vegetable products.

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PATĒRĒTĀJU EKONOMISKĀS INTERESES UN TO AIZSARDZĪBA ES VIENOTAJĀ TIRGŪ

CONSUMERS ECONOMIC INTERESTS AND THEIR PROTECTION ON THE EU MARKET

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Abstract

Interests of consumers remain paramount in EU competition policy. Respect for consumers' economic and legal interests will encourage their confident participation in the internal market. This is why a substantial regulatory framework is already in place to promote the consumer interest and why further work will be needed to update and fill acknowledged gaps in the existing framework. However consumers only then will benefit, if the legislation will be effectively. Hence, it is necessary to improve the legislation with the purpose of increase of its practical efficiency. Therefore current measures where necessary for development of legislation basis in article are reviewed and updated. In increasingly dynamic and innovative markets, flexible approaches are key and an appropriate balance between regulatory and non-regulatory approaches needs to be found. At the same time, soft law has to be made effective and consumer-business dialogue promoted. In addition, the consumer interest will need to be more systematically integrated into the policy making process in all relevant areas. For active cooperation with consumers' in pertinent areas it is necessary to include in the legislation a new legal norms and methods. It will make proposals to bring the existing consumer credit legislation up to date with current credit offering methods and practices. The aim will be to review the existing regulatory framework on consumer credit, taking account of developments in the markets and comments of interested parties. All EU polices have some impact on consumers. Some are more critical to consumer economic interests than others. Therefore main aim is to improve policymakers' understanding of the nature of consumer interests. To pursue it, influence on economic interests of the consumer, especially notably price, a choice and access to essential foods at reasonable prices in article is investigated.

Key words: consumers' protection, consumers economic interests, services, legislation.

1. Ievads
1. Introduction

Patērētāja interešu ievērošana paliek visaktuālākā problēma ES konkurences politikā. Patērētāju ekonomisko un tiesisko interešu ievērošana veicina patērētāju aktīvu piedalīšanos iekšējā tirgū. Tas izskaidro, kāpēc tik būtiska ir tādas regulēšanas sistēmas izstrāde, kas stimulētu patērētāju intereses. Tāpēc ir nepieciešams pakāpeniski pilnveidot pastāvošo likumdošanas sistēmu. Saprotams, ja likumdošana būs efektīva, tad arī patērētāji būs ieguvēji. Lai varētu efektīvi realizēt likumdošanu un koriģēt esošus trūkumus, svarīgi ir iesaistīt dialogā pašus patērētājus. Tirgum kļūstot arvien dinamiskākam un inovatīvam, tieši elastīgas pieejas meklēšana var būt efektīvs risinājums likumdošanas sistēmas pilnveidošanai. Tajā paša laikā arī nepietiekami konsekventu likumdošanas sistēmu var padarīt par efektīvu, veicinot dialogu starp patērētāju un ražotāju, pārdevēju vai pakalpojumu sniedzēju. Likumdevējiem jādomā arī par patērētāju interešu sistēmisko integrēšanu likumu un citu normatīvo aktu radīšanas procesā visās saistītās jomās. Piemēram, pastāvošā patērētāja kreditēšanas likumdošana praksē bieži vien neatbilst pastāvošajām kredītu piedāvājumu metodēm. Arī ES likumdošanai patērētāju tiesību aizsardzības jomā ir aspekti un momenti, kas negatīvi ietekmē patērētāju ekonomiskās intereses. Tāpēc likumdevējiem īpaši svarīgi laikus saprast patērētāju interešu būtību. Savukārt šai problemātikai ir pievērsušies vairāki pētnieki Latvijā (Ciemiņa,

Krastiņš u.c. 1998., Moskvins, 1999. u.c.) un citās valstīs (Ozimek, Rogowska, 1999. u.c.) Taču patērētāju intereses un iespējas nemitīgi mainās. Analītiski vērtējumi atklāj arvien jaunas problēmas un daudzus jaunus aspektus patērētāju tiesību, interešu, prasību un citas jomās, kurās nepieciešama zinātniska izpēte.

Darba mērķis – izpētīt patērētāju ekonomisko interešu aizsardzības problēmas Latvijā, ievērojot patērētāju interešu aizsardzības kopējos principus Eiropas Savienībā.

Mērķim pakārtoti konkrēti **uzdevumi**:

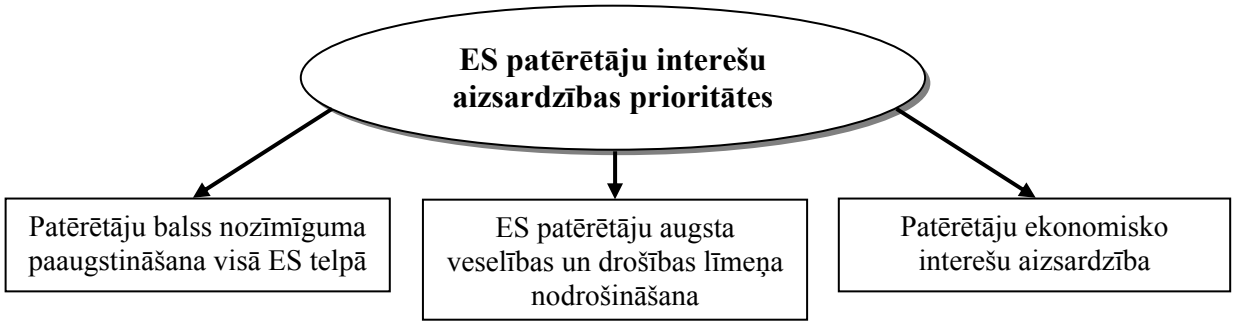
- izanalizēt pakalpojumu specifiku un kvalitatīva pakalpojuma sniegšanas problemātiku Latvijā;
- izpētīt patērētāju ekonomisko interešu aizsardzības tiesiskus aspektus un trūkumus.

Pētījumā tika izmantota ekspertu novērtējumu analīzes metode, kā arī monogrāfiskā, dedukcijas un indukcijas metodes. Pētījumā tika izmantoti likumi, valdības normatīvie dokumenti, speciālā literatūra un citi materiāli.

2. Patērētāju ekonomisko interešu aizsardzības tiesiskie aspekti un problēmas
2. Legal aspects and problems of the consumers economic interests protection

Patērētāju intereses kļūst arvien nozīmīgākās gan Eiropas Savienības vienotajā tirgū, gan visā pasaulē. Izmaiņas, kas saistītas ar globalizāciju un informācijas tehnoloģiju attīstību, ietekmē arī patērētāju intereses, vajadzības un lēmumu pieņemšanas procesu, patērētājiem apmierinot savas vajadzības. (Moskvin, Spakovica 2006.) Savukārt šo faktoru izmaiņas prasa arī patērētāju tiesību aizsardzības sistēmas attīstību un pilnveidošanu, tajā skaitā arī likumdošanas attīstību patērētāju tiesību aizsardzības jomā. Likumdošanai vajadzētu būt spējīgai reaģēt uz notikušajām izmaiņām. Piemēram, tirgus globalizācija noveda pie tā, kā dažkārt ir grūti izsekot, kur tieši, kurā valstī bija saražota noteikta produkcija, jo pastāv iespēja, ka produkcija ir iepirkta nevis Eiropas Savienībā, bet gan trešajās valstīs, pārveidota un pārdota tālāk ar ražotāja vārdu. Saskaņā ar „Preču un pakalpojumu drošuma likuma" (2004.) 2. panta otro daļu par ražotāju uzskatāms ne tikai Eiropas Savienībā reģistrēts preces izgatavotājs, ražotāja pilnvarots pārstāvis, ja ražotājs nav reģistrēts Eiropas Savienībā, importētājs, ja Eiropas Savienībā nav reģistrēts ražotāja pilnvarots pārstāvis, bet arī jebkura cita persona, kura savas saimnieciskās darbības ietvaros pārdod, piegādā vai citādi izplata preci, ja šīs personas darbība var ietekmēt preces drošumu. Šis likums attiecas uz jaunām, lietotām vai atjaunotām precēm. Tas nozīmē, ka preces atjaunošana vai pārveidošana šā likuma izpratnē ir pielīdzināta preces ražošanai. Globalizācija nozīmē, ka saražots produkts, iespējams, bija izturējis daudz ražošanas stadiju, katru stadiju dažādās valstīs, kas rezultātā var ietekmēt produkta kvalitāti.

Patlaban visa Eiropas Savienības likumdošanas sistēma patērētāju interešu aizsardzības jomā kalpo triju mērķu sasniegšanai (sk. 1. attēlu).



1. attēls. **ES patērētāju tiesību aizsardzības mērķi**
Figure 1. Purposes of the EU consumers protection
(*Avots: E. Špakoviča, 2006.)*

Tomēr joprojām, runājot par patērētāju tiesību aizsardzības sistēmu Latvijā, pastāv daudz problēmu patērētāju ekonomisko interešu nodrošināšanā, tajā skaitā:

- saņemot dažāda veidā pakalpojumus, patērētājs spiests samierināties ar neapmierinošo pakalpojumu kvalitāti par nepamatoti augstām cenām;
- saņemot dažāda veida pakalpojumus, ne vienmēr viegli pierādīt, ka pakalpojums ir neapmierinošas kvalitātes;

- nav ievērotas maznodrošināto patērētāju intereses;
- patērētājiem piedāvāti standartlīgumi par pakalpojumu sniegšanu un patērētājs nevar piedalīties līguma sagatavošanā.

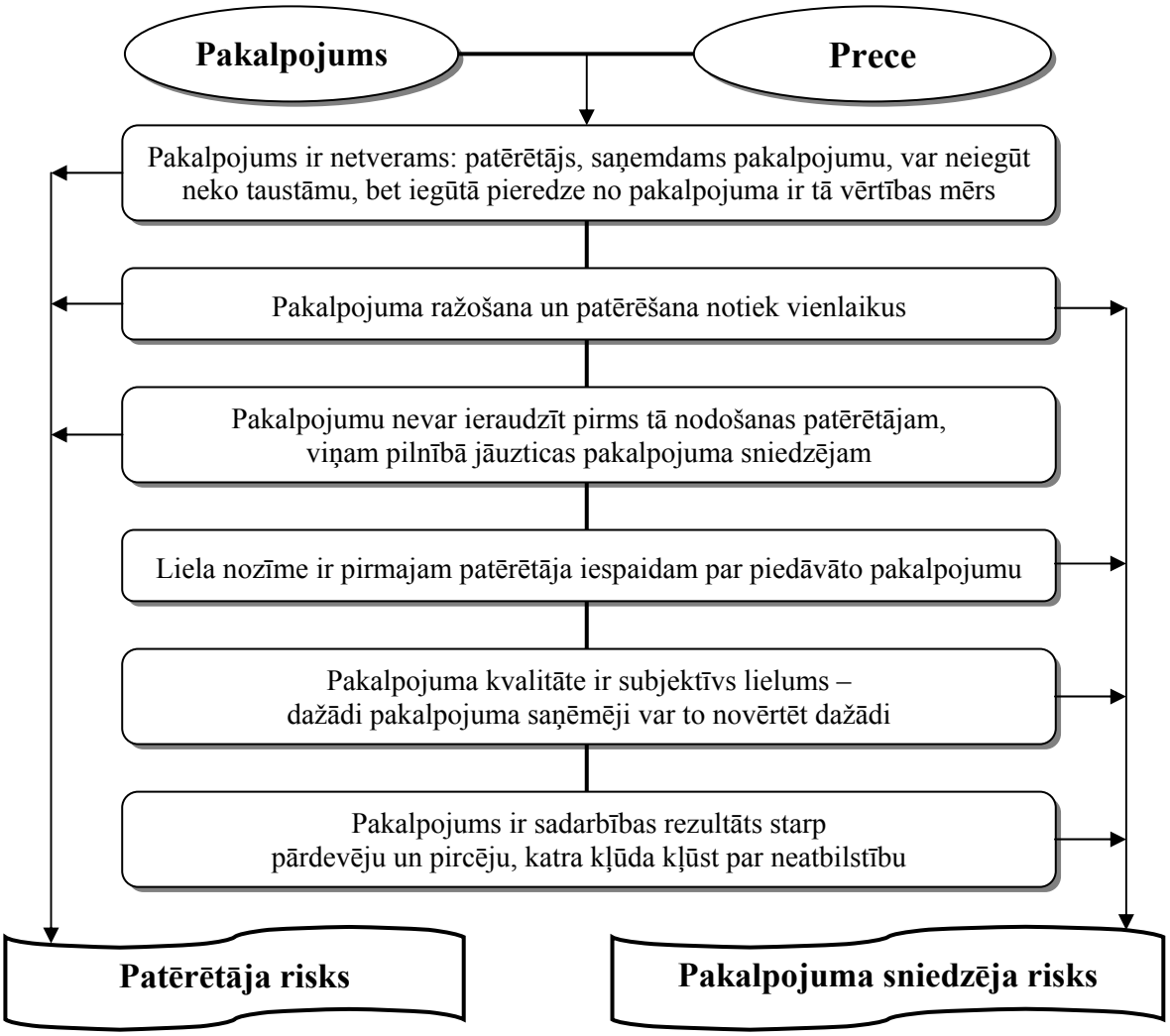
2.1. Pakalpojumu kvalitātes nodrošināšanas problēmas
2.1. Problems of the services quality providing

Reālajā dzīvē, saņemot pakalpojumus, patērētājiem rodas citas problēmas, nekā ar precēm. Pakalpojumi biežāk ir specializēti un dažkārt ir piemēroti konkrētajam patērētājam. Salīdzinot pakalpojumu ar preci (sk. 2. attēlu), var secināt, ka pakalpojuma kvalitāti gan patērētājiem, gan pakalpojuma sniedzējiem daudz grūtāk novērtēt nekā preces kvalitāti. Līdz ar to rodas dažādas domstarpības un dažādi viedokļi, vai sniegtā pakalpojuma kvalitāte atbilst cenai un patērētāja vēlmēm.

2. attēlā var redzēt, ka ikviens no pakalpojuma raksturojumiem salīdzinājumā ar preci var rādīt vai nu patērētāja neapmierinātību, vai arī pakalpojuma sniedzēja risku, vai arī pirmo un otro kopā. Šajā situācijā ir ļoti svarīgi, lai pakalpojuma pārdevējs būtu vienmēr gatavs korekcijas darbībām.

Pakalpojumu veido divi galvenie komponenti:

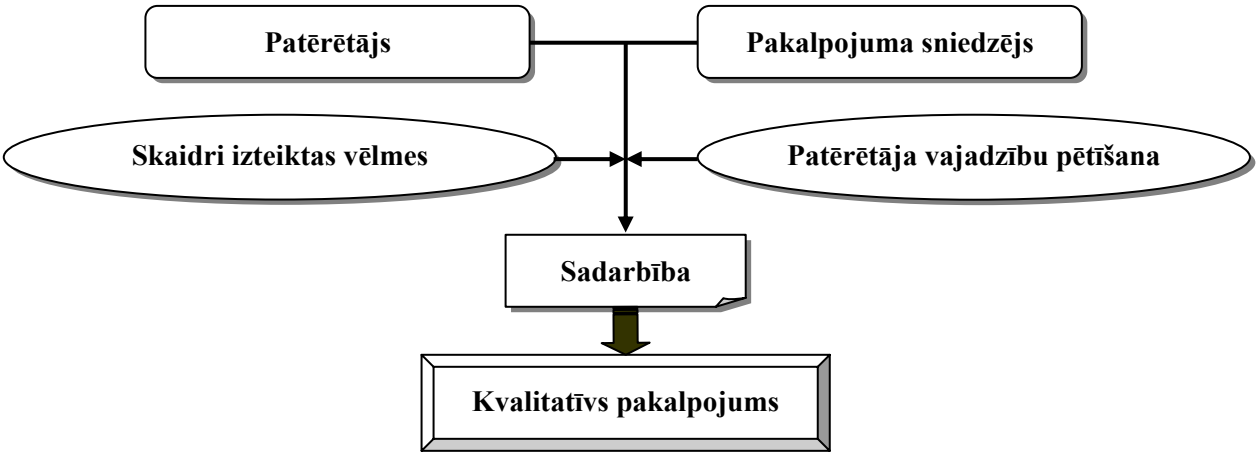
- uzņēmuma iekšēja organizācija;
- saskarsmes vide starp firmu un klientu. [ISO 8402]



2. attēls. **Pakalpojuma īpatnības**
Figure 2. Features of service
(*Avots: E. Špakoviča, izmantojot EN ISO 9004-1, 1991.)*

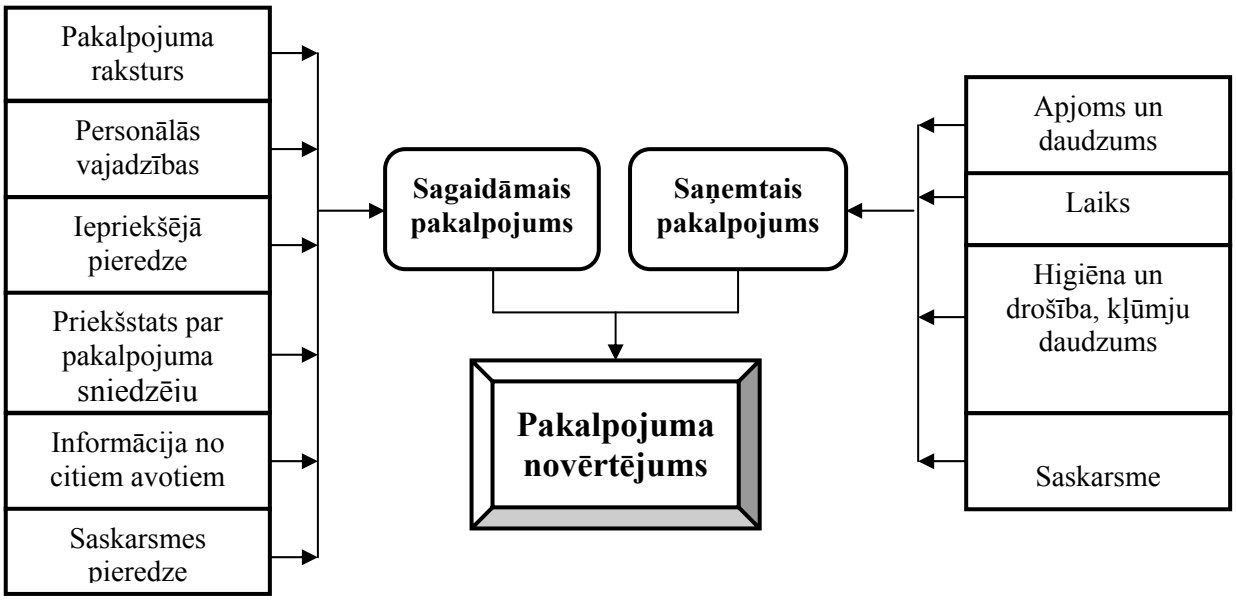
Kvalitātes vadības sistēmas ieviešana uzņēmumā var būt risinājums, kas apmierinātu gan patērētāju, gan pakalpojumu sniedzēju, jo, kā jau iepriekš secināts, pakalpojumu sniedzējam ir arī savi riski, sniedzot pakalpojumus. Pirmajam komponentam izvirzītās prasības ir kopējas ar produktu ražošanas procesu un tas nozīme, ka kvalitātes sistēmas projektēšanā un ieviešanā jāievēro izvēlētā kvalitātes sistēmas modeļa prasības. Otrais komponents izvirza papildu prasības attiecībā uz saskarsmes vides veidošanu. Tomēr arī šo komponentu nevar analizēt atrauti no pārējiem kvalitātes sistēmas elementiem.

Viens no pakalpojumu kvalitātes vadības pamatprincipiem ir šāds – turēties cieši pie patērētāja, tas ir, pētīt patērētāja vajadzības, izzināt, ko viņš uzskata par vērtību. Pakalpojums ir tipiska problēmu risināšanas darbība, kurā patērētāja klātbūtne ir pirms pakalpojuma, tā laikā un pēc tā. Vienalga, kāda ir vajadzība, patērētājs pakalpojuma rezultātā gaida būtisku uzlabojumu. Tātad patērētājs ir ieinteresēts, lai visas vēlmes būtu skaidri formulētas, jo visu vēlmju piepildījumu summa veido pakalpojumu (3. attēlu).



3. attēls. **Kvalitatīvo pakalpojumu ietekmējošie faktori**
Figure 3. The factors influencing the quality of the services
(*Avots: E. Špakoviča, izmantojot EN ISO 9004-1, 1991.)*

Saskaņā ar ISO 8402 standarta definīciju, pakalpojumu var uzskatīt par kvalitatīvu, ja tas ir:
1) efektīvs, tas ir, apmierina deklarētās un iedomātās patērētāja vajadzības un vēlmes;
2) lietderīgs, tasir, sasniegts ar minimāliem iekšējiem resursiem un izmaksām.



4. attēls. **Pakalpojuma reālās novērtēšanas process un tās ietekmējošie faktori**
Figure 4. Process of a real estimation of quality of service and on it influencing factors
(*Avots: E. Špakoviča, izmantojot EN ISO 9004-1, 1991.)*

Tomēr jāatceras, ka galvenais soģis pakalpojumam ir patērētājs. Patērētāja novērtējums pamatojas uz viņu vēlmju un iegūto vērtību salīdzināšanu (sk. 4. attēlu).

Saņemtais pakalpojums pamatojas uz tehniskiem komponentiem, tas ir, kas piegādāts, kā arī uz uzvedības elementiem – kā tas izdarīts. Līdz ar to var secināt, ka viens no galvenajiem rādītājiem pakalpojuma kvalitātes novērtēšanā ir patērētāja viedoklis par šo pakalpojumu.

Katrs patērētājs neatkarīgi no ienākuma līmeņa vēlas saņemt kvalitatīvu pakalpojumu par pieejamu cenu. Tādi pakalpojumi, kā, piemēram, transports, sakari, komunālie pakalpojumi, telekomunikācijas pakalpojumi veido būtisku patērētāju patēriņa izdevumu daļu un šie izdevumi palielinās laikā periodā no 1996. gada līdz 2005. gadam (sk. 1. tabulu).

1. tabula
Table 1

Patēriņa izdevumi pilsētu mājsaimniecībās, Ls
Consumption Expenditure in Urban Households
(Mājsaimniecības…, 2006)
vidēji uz vienu mājsaimniecības locekli mēnesī

	1996	1997	1998	1999	2000	2002	2003	2004	2005
Patēriņa izdevumi, tajā skaitā	**49,05**	**52,5**	**64,13**	**67,68**	**71,18**	**101,5**	**113,7**	**128**	**141,7**
Mājoklis, ūdens, elektroenerģija, gāze un cits kurināmais	8,41	9,45	12,27	13,4	13,23	14,75	15,88	17,87	18,71
Transports	3,13	3,69	4,48	5,29	5,75	10,13	11,97	14,53	15,25
Sakari	0,78	1,17	2,36	3,22	4,12	6,22	7,12	8,67	8,97

Tādu pakalpojumu veidu īpatsvars kā transporta pakalpojumi un sakaru izdevumi pieaug arī kopējā patēriņa izdevumu struktūrā laika periodā no 1996. gada līdz 2005. gadam, kas liecina par augošām patērētāju interesēm un pieprasījumu pēc šiem pakalpojumiem (sk. 2. tabulu).

2. tabula
Table 2

Patēriņa izdevumu struktūra pilsētu mājsaimniecībās, %
Structure of Consumption Expenditure in Urban Households
(Mājsaimniecības…, 2006)

	1996	1997	1998	1999	2000	2002	2003	2004	2005
Patēriņa izdevumi, tajā skaitā	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Mājoklis, ūdens, elektroenerģija, gāze un cits kurināmais	17,1	18	19,1	19,8	18,6	14,5	14	14	12
Transports	6,4	7	7	7,8	8,1	10	10,5	11,3	11,6
Sakari	1,6	2,2	3,7	4,8	5,8	6,1	6,3	6,8	6,1

Likumā „Par sabiedrisko pakalpojumu regulatoriem" (2000.) ir atrunāts, ka Sabiedrisko pakalpojumu regulēšanas komisija (SPRK), aizsargādama patērētāju ekonomiskās intereses, regulē sabiedrisko pakalpojumu sniegšanu kā komercdarbību tādās nozarēs, kā, piemēram, enerģētika, elektroniskie sakari, pasts, dzelzceļa transports (tajā skaitā pasažieru pārvadājumi pa dzelzceļu). Savukārt pašvaldību regulators regulē sabiedrisko pakalpojumu sniegšanu kā komercdarbību sadzīves atkritumu apsaimniekošanā, ūdensapgādē, kanalizācijā un siltumapgāde. Līdz ar to Komisijas regulējamie komersanti pārstāv elektroenerģijas, gāzes un ūdens apgāde, kā arī transporta un sakaru nozares, kas 2005. gadā veidoja 18,6% no iekšzemes kopprodukta (transports un sakari – 15,9%, elektroenerģijas, gāzes un ūdens apgāde – 2,7%). Transporta un sakaru nozarei 2005. gadā salīdzinājumā ar iepriekšējo gadu bija viens no straujākajiem apjoma pieaugumiem – 16,2%, savukārt elektroenerģijas, gāzes un ūdens apgādes nozarei – 2,7 procenti. Iekšzemes kopprodukta apjoms 2005. gadā palielinājās par 10,2 procentiem (Regulējamās…, 2006.).

Sabiedrisko pakalpojumu regulēšanas komisijas viena no funkcijām ir aizstāvēt lietotāju intereses un nodrošināt:

- pakalpojumu pieejamību un izvēles iespējas visiem patērētājiem, tajā skaitā arī maznodrošinātajiem patērētājiem, nodrošinot:
  - ✓ vairāku pakalpojumu grozu variantu pieejamību, ieskaitot dažādas kvalitātes un apjoma pakalpojumus;
  - ✓ "mīkstas" parādnieku atslēgšanas procedūras turpmāka izplatīšana;
  - ✓ stingra personas datu un informācijas par saņemtajiem pakalpojumiem aizsardzība.
- cenu un tarifu atbilstību valsts ekonomiskajai situācijai un pakalpojumu kvalitātei;
- drošību un stabilitāti pakalpojumu saņemšanai ilgtermiņā;
- vienotu un nediskriminējošu procedūru pakalpojumu lietotāju pretenziju izskatīšanai (Pamatnostādnes…, 2006.).

Attiecībā uz regulējamiem uzņēmumiem SPRK funkcijas ir noteikt tarifus un to aprēķināšanas metodiku un uzraudzīt sabiedrisko pakalpojumu atbilstību licences nosacījumiem, noteiktām kvalitātes un vides aizsardzības prasībām, tehniskajiem noteikumiem, standartiem, kā arī līgumu noteikumiem, kas arī saistīts ar patērētāju ekonomiskajām interesēm, jo SPRK:

- nosaka pakalpojumu kvalitātes standartus,
- veicina pastāvīga pakalpojumu kvalitātes uzlabošanos,
- pievērš uzmanību pakalpojumu kvalitātes uzraudzībai monopola pakalpojumu sniedzēja darbības laikā;
- nosaka kompensācijas procedūras patērētājiem nesaņemtu vai pazeminātas kvalitātes pakalpojumu gadījumā.

Diemžēl visas šīs funkcijas SPRK līdz šīm brīdim nebija spējīga īstenot. Piemēram, maznodrošināto patērētāju intereses reāli nav aizsargātas, pakalpojumu izvēles iespējas patērētājiem nav nodrošinātas un patērētāji ir spiesti samierināties ar esošajiem pakalpojumu sniedzēju piedāvājumiem, kuru pakalpojumu kvalitāte ir neapmierinoša un cenas par šiem pakalpojumiem – nepamatoti augstas. Patērētāju interešu aizsardzības sistēma nepilnveidojas arī attiecībā uz nediskriminējošu procedūru pakalpojumu lietotāju pretenziju izskatīšanu, pakalpojumu kvalitātes uzlabošanas veicināšanu uzņēmumos un attiecībā uz kompensācijas procedūrām patērētājiem (nesaņemtu vai pazeminātās kvalitātes pakalpojumu gadījumā). Līdz ar to, ņemot vērā arvien augošo šāda veida pakalpojumu nozīmi un īpatsvaru gan patērētāju budžetos, gan tautsaimniecībā kopumā, var secināt, ka ar katru gadu patērētāju ekonomisko interešu aizsardzības problēma tikai saasinās. Latvijai iestājoties Eiropas Savienībā, daudz normatīvo aktu ir pārņemts, ņemot vērā ES pieredzi patērētāju ekonomisko interešu aizsardzības jomā, bet tomēr pētījumu rezultāti liecina par to, ka uzmanība jāveltī ne tikai likumdošanas harmonizēšanai un pilnveidošanai, bet arī likumu un citu normatīvo aktu adaptēšanai un piemērošanai Latvijas apstākļiem, situācijai un likumu un citu normatīvo aktu realizācijas iespējām, ievērojot, ka Latvijā darbojas pietiekami daudz monopoluzņēmumu un lielo uzņēmumu, ar kuriem grūti konkurēt mazajiem uzņēmumiem un kuri nav ieinteresēti celt pakalpojumu kvalitātes līmeni un samazināt pakalpojumu cenas.

2.2. Patērētāju ekonomisko interešu aizsardzība, slēdzot kreditēšanas līgumu

2.2. Protection of consumers' economic interests concluding the contract of crediting

Pēdējos gados arvien vairāk patērētāju izmanto sarežģītus finanšu pakalpojumus un izmanto dažāda veida kredītus, slēdzot kreditēšanas līgumus. Rakstiskai darījuma formai vajadzētu nodrošināt, lai darījuma dalībnieki būtu pilnība informēti par darījuma saturu, tiesībām un pienākumiem. Kaut arī darījumi ir noformēti rakstiski, darījumu dalībnieki ļoti bieži pilnība neapzinās noslēgtā darījuma sekas. Darījumos, kur vien no darījuma pusēm ir uzņēmums, kas konkrēto darījumu jomā darbojas jau ilgu laiku un ir uzkrājis profesionālu pieredzi, bet otra ir fiziska persona, kas šādu darījumu, iespējams, slēdz pirmo un vienīgo reizi savā mūžā, nepieredzējusī puse ir ļoti vāji aizsargāta. Spilgts praktisks piemērs šādiem darījumiem ir banku hipotekārās kreditēšanas un ķīlas līgumi, kas lielākoties jau ir iepriekš sagatavoti tipveida līgumi un bez darījuma noteikumu apspriešanas tiek piedāvāti parakstīšanai. Līgumi bieži vien ir tik sarežģīti, ka otra puse, pat iepazinusies ar līguma tekstu, ne vienmēr ir spējīga izprast līguma praktisko nozīmi un to, kādas tiesības un pienākumus tas nodibina.

Nepieciešamība aizsargāt patērētājus no standarta jeb tipveida līgumiem ir uzsvērta jau 1993. gada Eiropas Savienības Direktīva 93/13/EKK par negodīgiem noteikumiem patērētāju līgumos: „preču un pakalpojumu ieguvējiem jābūt aizsargātiem pret pārdevēja vai piegādātāja pilnvaru ļaunprātīgas izmantošanas, jo īpaši attiecībā uz vienpusējiem standartlīgumiem un patērētājam būtu jādod iespēja faktiski izskatīt visus noteikumus". (Lediņa, 2005.) Direktīva paredz, ka „līguma noteikumu, par kuru nebija atsevišķas apspriešanās, uzskata par negodīgu, ja pretēji prasībai pēc godprātības, tas rada būtisku nelīdzsvarotību pušu tiesībās un pienākumos, kas izriet no līguma, un tas notiek par sliktu patērētājam. Līguma noteikumu vienmēr uzskata par tādu, ja tas ir sagatavots jau priekš un tāpēc patērētājam nav bijusi iespēja ietekmēt to saturu, jo īpaši saistībā ar iepriekš noformulētiem standartlīgumiem." Šādi noteikumi nostāda patērētāju absolūti neizdevīgā un nevienlīdzīgā situācijā ar pakalpojuma sniedzēju, ierobežojot viņa tiesības. Šī Direktīva ir iestrādāta Latvijas Patērētāju tiesību aizsardzības likumā (Patērētāju tiesību…, 2005.), un likuma 6. pants paredz, ka līguma noteikums, kuru līgumslēdzējas puses savstarpēji nav apspriedušas, ir netaisnīgs, ja tas pretēji labticīguma prasībām rada būtisku neatbilstību līgumā noteiktajās līgumslēdzēju pušu tiesībās un pienākumos par sliktu patērētājam.

Tāpat, analizējot „Noteikumus par patērētāja kreditēšanas līgumu" (1999.), nākas konstatēt, ka bieži tiek ignorēti noteikumi: ja reklāmā vai tirdzniecības, vai arī pakalpojumu sniegšanas vietā tiek piedāvāta iespēja kreditēt patērētāju, jānorāda arī cena, par kādu prece vai pakalpojums tiek piedāvāts patērētājam par tūlītēju samaksu, gada procentu likme, sākotnējās iemaksas lielums. Sakarā ar to, ka, piedāvājot kreditēšanas iespējas patērētājiem, ne vienmēr norādīta gada procentu likme, kas izrēķināta saskaņā ar „Noteikumiem par patērētāja kreditēšanas līgumu" un patērētājiem šī vērtība ir ļoti grūti izrēķināmā, patērētājiem ir liegta iespēja salīdzināt kredīta piedāvājumus, kas arī ir patērētāju ekonomisko interešu neievērošana, un to tiesību pārkāpums, kas ir paredzētas likumos un citos normatīvajos aktos.

Secinājumi
Conclusions

1. Pastāv daudz problēmu patērētāju ekonomisko interešu nodrošināšanā – patērētāji spiesti samierināties ar neapmierinošo pakalpojumu kvalitāti par nepamatoti augstām cenām, patērētājiem ne vienmēr viegli pierādīt, ka pakalpojums ir neapmierinošas kvalitātes, nav ievērotas maznodrošināto patērētāju intereses, patērētājiem piedāvāti standartlīgumi par pakalpojumu sniegšanu.
2. Kvalitatīvs pakalpojums rodas patērētāja un pakalpojuma sniedzēja sadarbības rezultātā.
3. Viens no galvenajiem rādītājiem pakalpojuma kvalitātes novērtēšanā ir patērētāja viedoklis par šo pakalpojumu. Savukārt patērētāja novērtēšana pamatojas uz viņu vēlmju un iegūto vērtību salīdzināšanu un atbilstību.
4. Ņemot vērā pakalpojuma īpatnības, var secināt, ka pakalpojuma reālo kvalitāti patērētājiem bieži vien ir grūti novērtēt. Patērētāja vērtējums vienmēr ir subjektīvs. Līdz ar to rodas dažādas domstarpības un dažādi viedokli par to, vai sniegta pakalpojuma kvalitāte atbilst cenai un patērētāja vēlmēm.
5. Pakalpojumu kvalitātes novērtēšanas kritēriji prasa periodisku precizēšanu un saskaņošanu ar pakalpojumu patērētājiem, piemērām, atklātu diskusiju presē, televīzijā vai arī aptauju formā. Arī pati pakalpojumu kvalitātes novērtēšanas sistēma ir regulāri jāpilnveido. Tāda dinamiskāka sistēma var kļūt par turpmāko patērētāju aizsardzības sistēmas attīstības nosacījumu, kā arī ražojumu un pakalpojumu kvalitātes turpmākas pilnveidošanas potenciālu.
6. Uzmanība jāveltī ne tikai likumdošanas harmonizēšanai un pilnveidošanai, bet arī likumu un citu normatīvo aktu adaptēšanai Latvijas apstākļiem, situācijai un likumu un citu normatīvo aktu realizācijas iespējām, ievērojot, ka Latvijā darbojas pietiekami daudz monopoluzņēmumu un lielo uzņēmumu, ar kuriem grūti konkurēt mazajiem uzņēmumiem un kuri nav ieinteresēti celt pakalpojumu kvalitātes līmeni un samazināt pakalpojumu cenas.

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FOOD CONSUMPTION AND ITS REGIONAL ASPECTS IN LATVIA

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Abstract

The article overviews food available supply, connected with consumption in Latvia, and import dependency ratio for different groups of food is evaluated. Research results on inhabitant's food consumption or nutrition are outlined, evaluating the factors affecting them. Various food products consumption and its nutritive value in Latvian urban and rural residents, as well as various Latvian regions' residents' food intake or diet are evaluated and compared. The results of assessment of main nutrition value - energy, protein, fats and carbohydrates - per day per capita in various Latvian regions and its connection with inhabitants' income level are given. Consumed food quantities and qualitative aspects in different Latvia's regions as well as in urban and rural areas are evaluated and various food groups' consumption is compared. Connection between choice of several food groups and population income and its changes is evaluated. Latvian inhabitants' nutrition or diet is evaluated and compared to Latvian scientists' diet recommendations, as well as to other European countries and average consumption per capita in Europe. Expected consumption or forecast of food group's and product's consumption trends in Latvia for 2007 through 2013 are assessed.

Key words: food, consumption, nutrition, value, region.

Introduction

By bringing together the larger part of the food and agricultural data in each country, food balance sheets also serve in the detailed examination and appraisal of the food and agricultural situation in a country. A comparison of the quantities of food available for human consumption with those imported will indicate the extent to which a country depends upon imports (import dependency ratio). Data on per capita food supplies serve as a major element for the projection of food demand, together with other elements, such as income elasticity coefficients, projections of private consumption expenditure and population. It is important to note that the quantities of food available for human consumption, as estimated in the food balance sheet, relate simply to the quantities of food reaching the consumer.

The aim of study was to assess: food balance, food consumption and nutrition value issues in Latvia and different regions, and rural and urban areas in the period 2003-2005; as well as to forecast tendencies and projections of food consumption in the period from 2007 to 2013 in Latvia.

However, the amount of food actually consumed may be lower than the quantity shown in the food balance sheet depending on the degree of losses of edible food and nutrients in the household, e.g. during storage, in preparation and cooking. Food balance sheets do not give any indication of the differences that may exist in the diet consumed by population and different population groups, e.g. different socio-economic groups and geographical areas within a country. To obtain a complete picture, food consumption surveys have been performed. A comparison of the quantities of food available for human consumption with those imported indicates the extent to which a country depends upon imports (import dependency ratio). The Latvia's import dependency ratio was calculated by using FAO (The Statistics Division, FAO) methodology. The study of Latvia's inhabitants food consumption and its aspects is based on: the published and unpublished data of State Statistical Committee/Central Statistical Bureau as well as the databases (2003 – 2005) of Household Budget Survey (further - HBS) done by the Household Budget Statistics Department of Latvian Central Bureau of Statistics. The expenditures for food and alcoholic beverages in the restaurants, cafés and other places of catering services are not included in the HBS. These food expenditures shows increasing trend, because in 2003 expenditures for catering in all households was 15.1%, in 2004 – 17.0%, but in 2005 already 17.7%. This trend was observed in other countries (Roach, S.).

The calculations of nutritional and nutritive values were done using the norms of chemical content of food products by Souci and co-authors (Souci, Fachmann, Kraut, 1994).

Food consumption forecast was made, basing on data analysis of previous years. In order to establish permanent connections, statistical data analysis was performed, where equalization of dynamical lines was done with analytical equalizing methods, resulting in straight or regular curved trend line, best reflecting the data analyzing. Calculation was done with the least squares method and the results were expressed as the trend lines or trend models. For the evaluation of the trend models the demand curve - Engel curve was used, which is based on Engel's Law – the negative relationship between real income (nominal income divided by the index of consumer prices) and consumption of a food, where with rising incomes, the share of expenditures for food products declines (Engel's Law & Curves) Engel curves show the impact of inhabitant's income level changes on consumption of different food product groups. Therefore, when predicting the changes of food product's consumption, the increase of inhabitant's income has been taken into consideration.

Results and discussion

1. The food import dependency ratio of Latvia

The percentage is constant - 60/40 of staples' value in the import structure of ready-made food products and agricultural products for processing in the period of last three years. In export, the potential cereals, meat and seed export growing; the percentage of food 75% has decreased (the ratio is 68/32). Ready-made food export value in 2005 for the first time during the last few years exceeds import value of agriculture staple, used for processing. Food import dependency ratio - ratio of food imports to food available for internal distribution. Table 1 shows Latvia's import dependency ratio of different food groups in 2003, 2004 and 2005. Total food import dependency ratio in Latvia has been growing for the last few years (4% in 2004/2003 and 3% in 2005/2004), connected with growth of comparatively cheaper import food products' proportion in retail.

Table 1

Import dependency (%) ratio of Latvia by different groups of food, 2003 – 2005

Group of food	2003	2004	2005
Cereals	11%	14%	21%
Starch-producing root crops	6%	6%	15%
Vegetables	21%	27%	29%
Fruits	64%	76%	66%
Meat	21%	21%	23%
Animal fats	22%	21%	12%
Milk except butter	9%	16%	13%
Fish and sea products	24%	38%	33%

Source: author's calculations based on own calculated food balance

2. Food consumption in different Latvia's regions

The biggest quantitative differences of food consumption in the regions were observed for the following product's groups: bread and cereals; fruits and vegetables; potatoes and sugar.

Certain regularities have been found analyzing food consumption in the different Latvia's regions. Latvia's bread and cereal product consumption is conversely inhabitant's income (Fig. 1). For instance, in region with low income (Latgale, Vidzeme) the consumption of bread and cereal products is bigger than in regions with higher income (Riga and Riga area). The observation that bread consumption has decreased conversely income level was founded in other studies (European Bread Market).

Unlike with cereal products, meat and meat products consumption show no relation to residents' income level, because, contrary to developed countries statistics and practice, speck is used for sausage production

and smoked speck has included in meat products group in Latvia. Thus the average meat products consumption, in regions fluctuating at 6 to 7.5 kg monthly per capita, does not reflect the actual meat and meat products consumption. More provided residents choose qualitative products, with higher dietary value, while less provided residents have only less qualitative products available, because of their relative cheapness. People with higher income level consume more total grams of protein and fat, particularly from animal sources (Kennedy, 2001, Compassion in World Farming Trust, 2004). As seen in Figure 2, in all regions, excluding Riga, in 2005 the average of all consumed meat types was pork (67.1%), poultry (23.2%) and beef (6.7%).

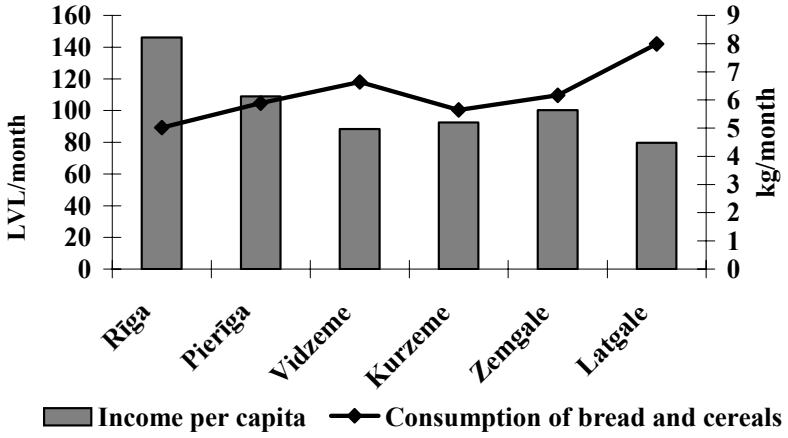

Figure 1. Trends of inhabitant's income (LVL per capita per month) and consumption of bread and cereal products (kg per capita per month) in different Latvia's regions, 2005

Source: author's calculations based on unpublished databases of CSB

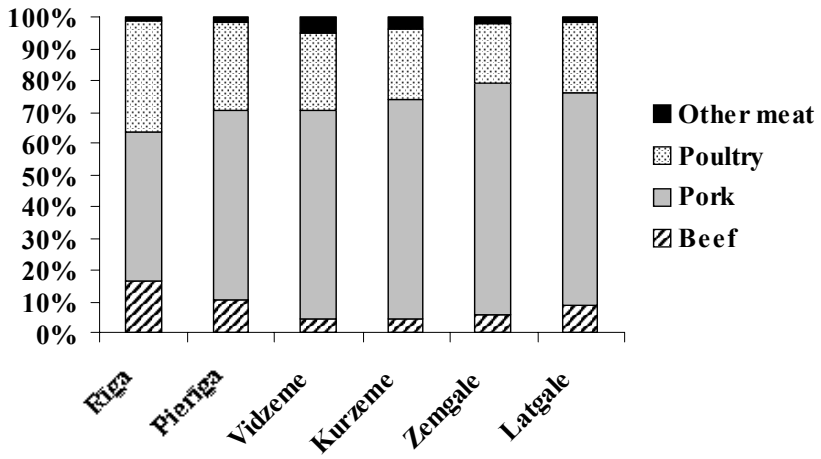

Figure 2. Structure of consumption of different types of meat in regions of Latvia, 2005

Source: author's calculations based on unpublished databases of CSB

Date of Table 2 allows drawing a conclusion that dairy products consumption in Latgale, as compared to Riga, has tendency to gradually equalization. The similar trend can be observed in the other Latvia's regions as well. Consumption of fruits and berries is connected with income level in different regions (Fig. 3), for instance, inhabitants in Riga consumed 7.9 kg fruits and berries per capita in 2005, but in Latgale – 4.6 kg.

Table 2

Consumption of milk products in Latgale in comparison with Riga (% per inhabitant), 2003 – 2005

Products	2003	2004	2005
Whole milk, l	187%	149%	112%
Low-fat milk, l	-79%	-69%	-55%
Yoghurt, kg	-52%	-41%	-34%
Cheese, kg	-73%	-65%	-58%
Pot cheese, cottage cheese, kg	-55%	-58%	-46%
Sour cream, kg	35%	31%	32%
Fermented milk production, l	-58%	-58%	-42%

Source: author's calculations based on unpublished databases of CSB

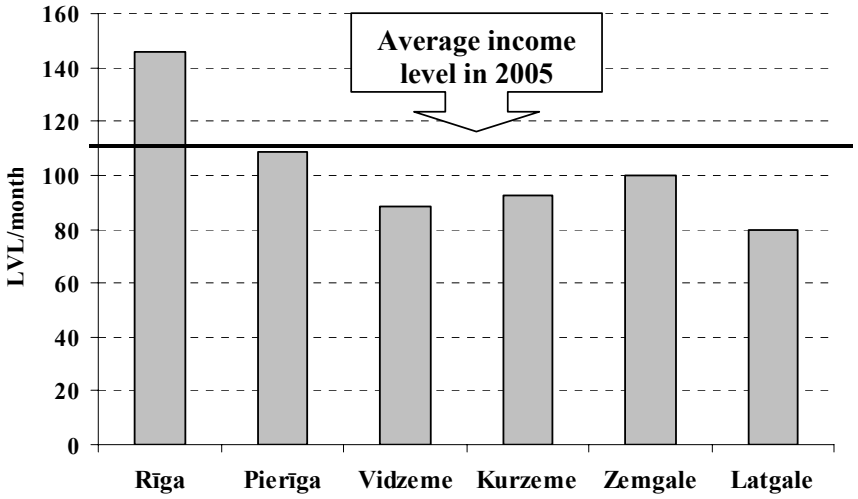

Figure 3. Income level (LVL) per capita per month in Latvia's regions, 2005

Source: author's calculations based on data from CSB databases

3. Food consumption in Latvia's urban and rural areas

As seen in Table 3, the bread and cereal products were consumed more in rural than in urban areas. The consumption of rye bread had biggest difference, for instance in urban areas – 21.2 kg per capita, as compared to rural area, where it was 33.6 kg per capita.

Urban residents overall consume meat and meat products, although the difference is not big: it was 7% in 2003, 3%, in 2004, 5% in 2005. The consumption of various meat products types varies more. The structure of meat products consumed by urban and rural residents varies. Urban residents consume four times more beef, almost twice more poultry and 1.4 times more offal, but rural residents consume more pork (26 kg in 2005), where 40% of the consumed meat is own-produced (Table 4).

Milk and dairy products consumption in urban and rural areas is basically very similar, although the structure of products is different (Table 5). For instance, whole milk consumption in rural areas in almost twice exceeds the amount of whole milk consumed in urban areas, besides more than half of milk is self-produced, whereas low-fat milk in rural areas is consumed 2.2 times less than in urban areas. Half of consumed cottage cheese and cream by rural people was own-produced. Urban residents consume more fermented milk products, yogurt and cheese.

Table 3

The consumption of main food products (kg /per capita/per month) in urban and rural areas of Latvia, 2003 – 2005

Group of food products	2003			2004			2005		
	Households			Households			Households		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Bread and cereal products	6.4	5.8	7.7	6.1	5.6	7.2	6.1	5.5	7.2
Meat and meat products	6.2	6.2	5.8	6.5	6.6	6.4	6.8	6.9	6.6
Fish and fish products	1.4	1.5	1.5	1.4	1.4	1.3	1.4	1.4	1.3
Milk and milk products	27.9	27.5	32.5	26.9	26.8	27.5	27.0	26.8	27.6
Oil and fats	1.3	1.1	1.4	1.2	1.1	1.3	1.2	1.1	1.3
Fruits and berries	5.2	5.8	3.7	5.2	5.8	3.6	5.8	6.5	4.3
Vegetables	7.9	7.8	8.2	7.5	7.3	8.1	7.7	7.4	8.3
Potatoes	9.3	7.5	10.8	8.1	7.0	10.5	8.7	7.5	11.1
Sugar	2.4	2.4	3.8	2.2	2.5	2.9	2.8	2.7	3.2

Source: author's calculations based on unpublished databases of CSB

Table 4

Consumption of meat and meat products (kg/per capita/per month) in urban and rural areas of Latvia, 2005

Meat products	Urban areas		Rural areas	
	Total	int.al. own produced	Total	int.al. own produced
Beef	4.4	0.1	1.7	0.4
Pork	19.3	2.7	26.0	10.2
Poultry	11.1	0.2	6.1	0.8
Sausage, smoked meat	25.4	0.4	25.2	2.2
Meat preparations	7.2	0.1	4.3	0.1

Source: author's calculations based on unpublished databases of CSB

Table 5

Consumption of milk and milk products (kg per capita per month) in urban and rural areas of Latvia, 2005

Milk products	Urban areas		Rural areas	
	Total	int.al. own produced	Total	int.al. own produced
Whole milk	36.15	3.52	71.67	45.34
Low-fat milk	13.30	-	6.05	-
Canned milk, dry milk	0.60	-	0.36	-
Yoghurt	6.33	-	4.25	0.03
Cheese	5.67	0.07	4.00	0.53
Pot cheese, cottage cheese	7.54	0.47	7.31	4.14
Sour cream	12.78	0.53	15.35	6.88
Fermented milk products	13.26	0.07	7.73	1.72

Source: author's calculations based on unpublished databases of CSB

From other significant product groups let us look at fats and sugar. The share of consumed fats by rural and urban citizens is similar – one third of total consumed amount of fat. The consumption structure here is not as pronounced as the aforementioned product groups. Rural residents consume less butter (30% of it is own-produced) but more margarine.

Sugar and sugar group products the second biggest (after bread and cereal products) carbohydrate source – 26% of total consumed carbohydrate amount. In rural areas, the sugar consumption is bigger by 30% and more than twice bigger than jam consumption - out of which 96% is own-produced.

4. Assessment of nutritional value of consumed food in Latvia

In the beginning of 1990s, with radical changes occurring in Latvia's economics, most families bought food products solely to satisfy quantitative needs. Only at the end of 1990s the diversification of these expenses begun - the assortment of food purchased expanded, nutrition value of the consumed products expanded and improved. Although it must be noted that nutrition value of consumed products assortment still is far from desirable, and definitely insufficient in families with low-income level. During 2003 to 2005 nutrition value of Latvia's residents, consumed with food (energy, protein and fats) grew by 1 to 2%.

The main reason of changes was the structural changes of the consumed products. Consumption of energy rich wheat and rye bread, pasta and wheat meal decreased, while consumption of pork, poultry and especially, sausage and smoked meat products consumption increased substantially.

The quantitative and qualitative changes of eating habits in the recent period have changed nutritive value of consumed food. Proteins, fats and carbohydrates provide calories necessary for energy. As evident in Table 6, in 2005 Latvia's inhabitants received 47.9% of calories with carbohydrates, 38.8% - with fats and 13.3% - with protein.

Table 6

The supply and actual consumption of food nutritional value in Latvia, 2003 2005, per capita per day

	2003.		2004.		2005.	
	Supply	**Consumption**	**Supply**	**Consumption**	**Supply**	**Consumption**
Energy, kcal						
Total	3017	2647	2750	2612	2771	2675
Plant-based	2202	1717	1950	1667	1932	1713
Animal-based	815	930	800	945	839	962
Carbohydrates, g						
Total	77	90	72	90	71	92
Plant-based	42	36	37	34	34	35
Animal-based	35	54	35	56	37	57
Fats, g						
Total	119	116	116	117	115	119
Plant-based	53	44	51	43	47	44
Animal-based	66	72	65	74	68	75

Source: author's calculations based on own calculated food balance and consumption

According to Latvian dieticians recommendations, in order to provide the necessary calories in a balanced diet, they should be received with carbohydrates (E%) rather than with fat (E%). In 2005, Latvia's inhabitants consumed 2675 Kcal daily, by 10% more than in 2000, although it is less than the recommended calories consumption (2827 Kcal daily).

There are same food consumption tendencies in Latvia than is observed in other countries in transition (Abele et al., 2004).

5. Tendencies and projections of food consumption 2007 – 2013 in Latvia

Food consumption dynamics in Latvia from 1990 till 2005, consumption regularities (various food consumption, depending on income - Engel curve), analysis of other European countries consumption and also analysis of world institution consumption forecast allow to predict the potential development of consumption dynamics in our country for the next several years. The forecast is, during the EU planned seven-year

period (2007 to 2013) bread and cereal products consumption will drop by almost 8%, due mainly to decrease in bread consumption.

Meat and meat products consumption in total will increase by 21%. Upward tendencies of pork and poultry consumption, which began in 1994, will continue. At the end of the forecast period, every resident will consume 27.1 kg of pork and 12.0 kg of poultry. The stop of beef consumption downslide and its demand increase is expected around 2008 and 2009, and as a result, every person in 2013 may consume 3.8 kg beef.

From the milk and dairy products, only the whole milk consumption will diminish by 12.3%. The consumption of the other dairy products will either remain unchanged (sour milk cheese, curds, cream) or increase. The expected yogurt demand growth is especially high – by 84%. Consumption of cheese, fermented milk products and canned milk could increase by 14 to 15% (Table 7).

Table 7

Expected consumption of main foodstuffs (kg/l per capita per year), forecast for 2007 – 2013

Groups of food products	2007	2008	2009	2010	2011	2012	2013
Bread and cereal products	68	66.7	65.8	65.1	64.7	64.5	64.2
Meat and meat products	90	93.2	96.6	98.9	101.2	102.6	104
Fish and fish products	17.3	16.8	16.4	16	15.6	15.3	14.9
Milk and milk products	328.4	330.9	334.3	338.5	342.7	346.6	351
Oil and fats	13.2	13	12.8	12.7	12.8	12.8	12.8
Fruits, berries and products	59.3	60.6	61.7	62.7	63.7	64.5	65.2
Vegetables	96.1	97	97.9	98.9	100.1	101.1	102.2
Potatoes	101.8	100.8	99.8	98.9	97.9	97	96
Sugar	33.2	32.8	32.4	32.3	32.1	32	31.8
Soft drinks	44.3	46	47.9	49.3	50.8	51.8	53.1
Coffee, tea, cacao	3	3	3.3	3.3	3.4	3.4	3.4
Alcoholic drinks	18.7	19.3	19.8	20.5	21.2	21.8	22.4

Source: author's calculations based on CSB data

All fish products demand decrease tendency will be observed, except sea products. Examining tendencies of fats group demand, it can be predicted that their consumption will diminish in 2013 by 4.8%. Increase of fruits and berries consumption (12.3%) could be connected mainly to the growth of imported fruits consumption (citruses, bananas, grapes).

Sugar and sugar products total consumption will probably diminish by 5.1%, including the drop of sugar consumption by 9.6%. Sugar confectionery (chocolate, chocolate confectionery, caramel, fudge, etc.) consumption is expected to rise. Predictions show the increase of coffee and tea consumption by 22 – 23%. Alcohol consumption could increase by 7.2%, but beer consumption could jump up by even 31.6%.

Conclusions

1. The total food import dependency ratio in Latvia has been increasing for the last few years (4% - 2004/2003 un 3% 2005/2004) - it is connected with growth of relatively cheaper import food products' proportion.
2. Rural residents, consume on average a similar amount of food, regardless of lower income, compared to urban residents.
3. The percentage of bread and cereal products in all regions has slightly decreased in total nutrition value, while percentage of meat and meat products has slightly grown.
4. Percentages of cereal and meat products nutritional value balance depends on the total region development, indirectly characterized by income per capita. The more developed region and the higher residents' income, the higher nutritive value of qualitative meat and meat products and lower bread and cereal products percentage in nutritional value balance.
5. The forecast is that during the planned seven years period (2007 to 2013), with residents' income growing, the food consumption tendencies will be similar to tendencies in developed countries' consumption

tendencies. Bread and cereal products consumption will decrease; meat and meat products consumption on the whole will increase; fish products consumption is expected to decrease by 15.6% (provided that the freshwater fish production in Latvia will not grow); fat consumption ill diminish; fruit and berries consumption can be expected to grow; potatoes consumption could drop slightly; regarding milk and milk products group, only consumption of whole milk will decrease, whereas the consumption of other milk products will either rise or will remain the same; while sugar consumption decrease, the consumption of sugar confectionary might grow.

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THE CONSUMER'S ECOLOGICAL CONSCIOUSNESS VERSUS RURAL PEOPLE`S STYLE OF LIFE

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Abstract

In the aspect of the contemporary huge ecological threat, ecological consciousness is very current. The most essential is developing the conviction of educational and social desirability and reasonability (Zioło I., 2002). The common knowledge is the essence and it forms social consciousness that is modified. Ecological consciousness is a part of social consciousness that influences a lot of factors. One of them is the level of consumerism that is friendly for natural environment.

Consumerism becomes one of the most important factors of the present ecological crisis. The tendency of widespread material consumption is far bigger than absorption possibilities of environment and brings gradual environmental destruction. Therefore, consumers` ecological consciousness should be reshaped and the influence of material consumption on their decisions and style of life should be changed.

The obligatory change in relation to natural environment which should be done according to sustainable development without nature degradation is possible only by education simplifying the choice of positive implications.

Key words: Consumerism, ecological consciousness, style of life, quality of life, rural people, consumer

Introduction

The necessary changes against environmental degradation within the stable economic growth are only possible due to a very strong ecological education. Only when the society has adequate knowledge about environmental rules and accepts the system of ecological style of life, people are able to restrain many negative results concerning environment. Every man, including rural people, should live with harmony with surrounding nature. His consumption patterns should take into account the public welfare. The society ecological consciousness should have an effect on decreasing the level of consumption and governments should spend more and more money on environmental protection means and ecological policy. In this context some researches were done among the villagers of Chojnice commune. The main research problems are as follows:

- What is the level of environment pollution in Poland in their own opinion?
- What are their attitudes towards the lack of respect for the protection of environment?
- What is the level of consumerism among the villagers of Chojnice commune and its impact on natural environment?

Some hypotheses were formulated based on the researches:

- Chojnice commune is the area of a lower level of pollution than other areas in Poland,
- The lack of respect towards environment and its protection is different among the inquired people,
- The community of Chojnice notices its own level of consumerism as too high in their area as in Poland, and it causes a lot of harm to the environment.

The diagnostic public opinion poll method and questionnaire techniques were used in the research. The public opinion poll was provided in September and October 2006 among 144 inhabitants of the community of Chojnice in the kujawsko-pomorskie province. 102 of them were women (70,8%), and 42 of them were men (29,2%).

The authors of the article try to analyze the style of life and the consumption level of the rural society and its level of ecological consciousness. The data presented in the article come from the authors research work within 2006.

Results and discussion

Stopping negative phenomena connected with pragmatism in relation to man-nature expects fitting up environment knowledge and taking proper value systems permits choices that are good for the whole world (Sychut T., Chmielewski T., 1990). It is necessary to create a vision of a new human - being living in natural environment by scientific and ecological movements. This vision can be realistic when people achieve a proper level of ecological consciousness.

The ecological consciousness conception has a lot of different interpretations in scientific literature. According to some authors it is only an idea or some ideas, some knowledge or images about environment. For others it a specific form of social consciousness, manifested in the standards of thinking and survival of biosphere (Domka L., 2001).

According to B. Poskrobko the ecological consciousness conception is used in two meanings. In the wider one it means the entire set of ideas, values, opinions about natural environment as a sphere of human life and development, the same for different group of people in the defined historical period. In the narrow meaning, more practical, ecological consciousness is a state of knowledge, ideas and images of people about the role of environment in human life, the degree of exploitation, hazard and security, and also the state of knowledge about management methods and instruments used in environment protection (Górka K., Poskrobko B., Radecki W., 1998).

Ecological consciousness can be considered in two fundamental spheres: technical-descriptive and standard-axiomatic. The first one concerns entirely knowledge about phenomena and processes in eco-systems and the ecological imagination that make the specific disposal human activity sequences forecast. The standard-axiomatic sphere is connected to the bio-centric oriented value system and it complies ecological ethic norms. It states the base of conscience of ecological man - new humanism appears (Aleksandrowicz J., 1988).

Ecological consciousness should be developed in a special way, because it is an essential factor of progress and it means some pro-environment activities. The environment state improvement is not automatic, but it is a several stage process that starts with changes in environment perception, the increase in consciousness , rise of social pressure, creation of different groups aimed at securing ecological safety and as a consequence it leads to proper state activities composed in the state environmental policy (Kośmicki E., 1998).

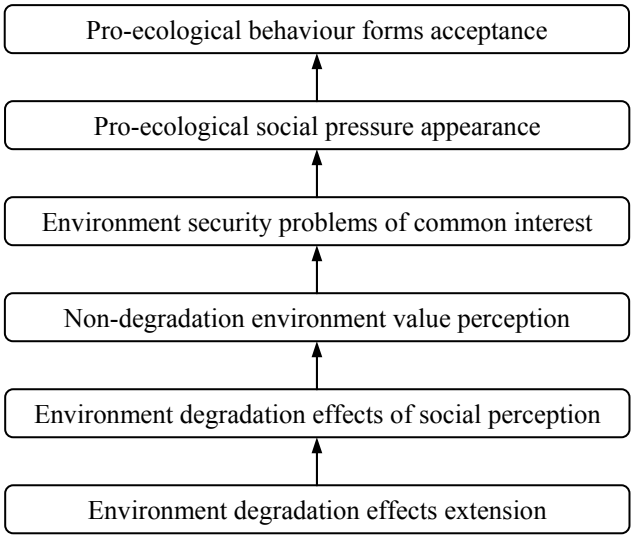

Figure 1. Ecological consciousness society process formation

Source: K. Górka, B. Poskrobko, W. Radecki, Environment security. Social, economic, law problems, PWE, Warsaw 1998, p. 31.

B. Poskrobko observes that common ecological consciousness is formed in everyday life, economy activity, education, generations' remittance and other forms (fig. 1). In these areas where there is enormous environment degradation, the environment degradation affects the social perception and provides change in pro-ecological manners. It provides to the dual problem of verification. It usually induces some new social behaviour forms that are developed from single local movements to ecological motions and proper policy. Pro-ecological activities give edification in a way of thinking and goings-on groups of people. In this way the necessity of reviewing ideas and opinions emerges (Górka K., Poskrobko B., Radecki W., 1998).

The most important problem of the proper level of ecological consciousness is a balance between consumption and natural environment. The effect of the final products of consumption on the environment is colossal. Consumerism has become one of most important reasons of the contemporary ecological crisis. Improper decisions and consumer behaviour have a huge impact on environment (Kiełczewski D., 2001). Disquieting is the fact that consumerism has become a trendy style of life that does not go together with the environment protection. The style of life that is characteristic for American society is spreading all over the world, and it would mean the necessity of using some services and goods four times more than could be allowed for natural environment (Kiełczewski D., 2001). In this respect it is the necessity of persuading consumers to change their preferences and style of life in the course of delimitation of the consumerism influences on their decisions. The pro-ecological style of life implementation determines not only ecological consciousness problems but also consumer behaviour. In this context a research on rural people was carried out.

Table 1

Level of education, age, and gender

Gender	Women		Men		Total	
Features	**Number**	**%**	**Number**	**%**	**Number**	**%**
Age (years)						
till 24	3	2,9	1	2,4	4	2,8
25-39	38	37,3	19	45,2	57	39,6
40-59	55	53,9	19	45,2	74	51,4
60 and more	6	6,0	3	7,2	9	6,2
Total	102	100,0	42	100,0	144	100,0
Level of education						
elementary	14	13,7	2	4,8	16	11,1
vocational	42	41,2	18	43,0	60	41,7
secondary	42	41,2	20	47,6	62	43,0
high	4	3,9	2	4,8	6	4,2
Total	102	100,0	42	100,0	144	100,0

Source: own elaboration based on researches.

Most of the respondents were a group of people between 40-59. 43% of them had secondary education, and 41.7% - vocational (table 1).

The basis of the research was the level of ecological consciousness of people living in rural areas. They were asked to present their opinions on natural environment pollution in Poland and in the researched area (table 2).

Chojnice commune inhabitants state that their region is ecologically cleaner than other areas of Poland. 65% of the respondents showed that the pollution in Chojnice is on the level of about 20%-30%, and 22.2% of the respondents qualified environment pollution on the level of 10%. In the scale of the country the natural environment pollution estimation was less beneficial. 54 of the respondents (37.5%) recognised environment pollution on the level of 50% and 12.5% of the respondents stated it on the level of 70%. The group of 20 people (13.9%) recognised environment pollution on the level of 40%. The difference between regional and country environment pollution in their opinion is considerable. It is obvious that we can notice the decline of ecological consciousness because Chojnice is an area with a very low level of environment pollution. Zaborski Landscape Park and National Park „Bory Tucholskie" are situated in the area of the Chojnice commune and they are areas with clean nature. The inhabitants can observe it and that is why they stated a low environment pollution level.

Table 2

Natural environment pollution in Poland and Chojnice commune in the opinion of inquired people

Pollution degree	Poland		Chojnice commune	
	Number	%	Number	%
10%	15	10,4	32	22,2
20%	11	7,6	54	37,5
30%	10	6,9	40	27,8
40%	20	13,9	3	2,1
50%	54	37,5	2	1,4
60%	9	6,2	2	1,4
70%	18	12,5	4	2,8
80%	2	1,4	2	1,4
90%	1	0,7	1	0,7
100%	-	-	-	-
without any opinion	4	2,8	4	2,8
Total	144	100,0	144	100,0

Source: own elaboration based on researches.

The next question concerned the respondents' ecological consciousness. It referred to some emotions that emerged when people do not have any respect to nature and its protection (fig. 2).

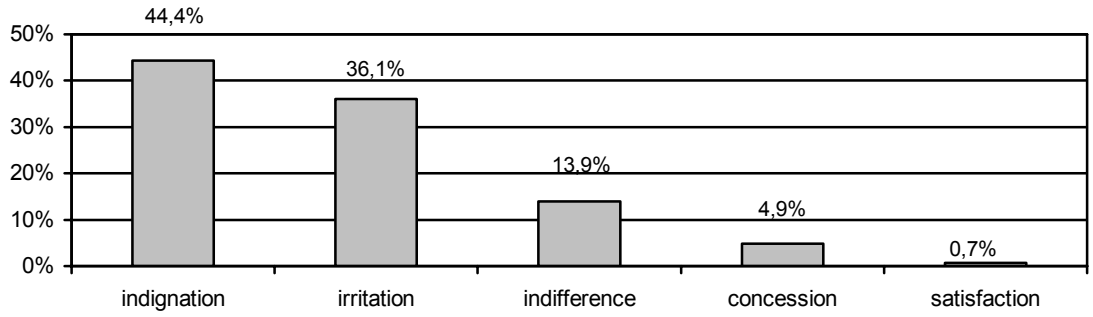

Figure 2. Respondents' emotions in relation to non-respect towards natural environment protection rules

Source: own elaboration based on researches.

Among the answers there are three types of manners considering nature and its protection, namely: opposition (indignation, irritation), advancement (satisfaction) and indifference. The breaking of rules and laws of nature excited indignation - 64 persons (44.4%), irritation - 52 persons (36.1%), indifference - 20 persons (13.9%). The disquieting fact is that among the respondents there were people demonstrating concession for this kind of activity (4.9%) and satisfaction - 1 person.

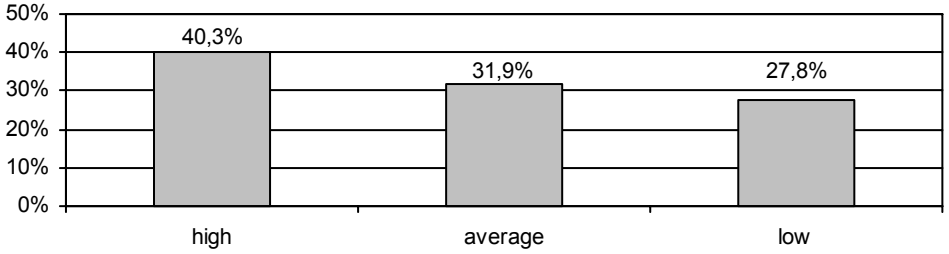

Figure 3. Level of consumption

Source: own elaboration based on researches.

The respondents stated that the level of consumption of Polish people is on a high level - 58 people (40.3%) and on an average level - 46 people (31.9%). Only in the opinion of 40 of the respondents (27.8%) the level of consumption is low.

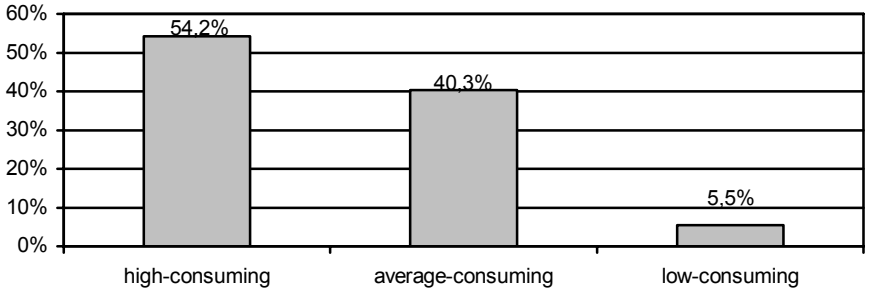

Figure 4. Style of life of the respondents

Source: own elaboration based on researches.

In relation to their own level of consumption, the answers were similar, but indications for an average and high level of consumption were much more than those concerning Poles. More than a half of the respondents - 78 (54.2%) showed their style of life as high-consuming, 58 of them (40.3%) as an average-consuming. Other respondents - 8 people found their style of life as a low-consuming (fig. 4).

The respondents were also asked if their own and other people high level of consumption is beneficial for environment. The positive answers were 91 (63.2%), negative - 28 (19.4%). The rest of the respondents - 25 (17.4%) did not have any opinion. This shows that the respondents have a very low orientation in this matter.

Summing up, it is necessary to certify that inhabitants of the Chojnice commune have general knowledge about the level of environment pollution in Poland and their region. Unfortunately, the lack of respect for nature environment and its protection is observed in their opinions.

Conclusions, proposals, recommendations

1. The research showed that the villagers of Chojnice are generally aware of the level of environment pollution in Poland as well as in their own area.
2. People often do not care about nature and its protection. This attitude in the opinion of the villagers of Chojnice is very negative, and it causes their irritation and anger.
3. The inquired people notice the high level of consumerism and they agreed that they conduct this style of life. In the nearest future this style could lead to increase in the level of environment pollution in the area.

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CHANGES IN THE LEVEL AND STRUCTURE OF FOOD CONSUMPTION IN FARM HOUSEHOLDS IN POLAND IN THE YEARS 2000 – 2005

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Abstract

The article presents a study of the level and structure of food consumption in farmers' households in Poland in the years 2000-2005. The numerical data originates mainly from the household budget survey by the Główny Urząd Statystyczny (the Central Statistical Office, GUS) in Poland. The share of food expenditures, within the households, was decreasing in the period under scrutiny, however, the change became conspicuous in 2004. Together with the level of self-sufficiency, the share of food expenditures of farm households constitute a relatively high figure. As far as the analysed period is concerned, the structure of consumption transformed as well. The quoted farms demonstrate the so-called abundant nutrition model. Rich model of nutrition based upon highly energetic products – bakery products, meat and potatoes consumed in rather large quantities.

Food consumption depends, in particular, on income, prices, the level of self-sufficiency and the redistribution effect.

Key words: food consumption, farm household, self-sufficiency, expenditures of households

Introduction

Farm households are exclusively or mainly maintained with an income from an individual agricultural farm. Such a household constitutes a specific subject with respect to food consumption because of its close relation to a homestead. The household members are, simultaneously, food producers and consumers – some of the food they produce is consumed by themselves. They are less dependant on the market exchange in order to satisfy their need for food.

This study aims to analyse some changes that occurred between 2000 and 2004 concerning Polish farm households' food consumption versus other socio-economic groups' patterns, as well as to select the factors that determine the size and structure of the consumption of the discussed households.

The article uses mainly the results of the GUS 2000 and 2005 household budget expenditure studies, prepared by means of a sampling method [GUS 2001, 2006]. The research comprised almost 2000 rural households of various size, including mainly three-person ones and greater, possessing different sources of their income – farming, non-farming and social benefits.

These do not include only market expenditure into the overall household food consumption outgoings, but also estimated value of the amount of farm produce that has been used to satisfy one's catering needs. The results of a survey by the Instytut Zywnosci i Zywienia (National Food and Nutrition Institute, IZiZ) [IZiZ 2003] have been provided, too, for the purpose of comparison.

The consumption patterns change slowly, whereas the studies dwell on a five-year-long period. This is too short to perceive all processes. Nevertheless, some of them manifest themselves even within such a short period.

The size and structure of food consumption in farm households

Food consumption in farm households is, to a large extent, subject to the same tendencies and regularities as those which determine the level and structure of consumption within the other types of households. One may, however, distinguish certain characteristics that are specific to this household group only.

According to Engel's law, the higher the income the lower the share of food expenditure within a household budget. As far as the period under scrutiny is concerned, the nominal income in all types of household was rising while the amount of money spent on food was, to a varying degree, decreasing (Table 1).

Table 1

The share of expenditure on food and non-alcoholic beverages in the disposable income of particular household types in 2000 and 2005 (in %)

Year	Overall	Including households of			
		employees	farmers	self-employed	retirees and pensioners
2000	30.2	26.7	40.4	24.3	34.4
2005	25.5	23.4	31.8	21.0	28.4

Source: Author based on *Budzety gospodarstw domowych 2000 i 2005* (*Household budgets in 2000 and 2005*), GUS, Warszawa 2001 and 2006.

It is worth adding that the food expenditures to nominal income ratio was much higher within the 1990s than in the 2000s. In 1990 this ratio – for all household types was at 50.6%, while in 1997 as little as 36.0%.

Food expenditures of farm households had decreased by just 1.2 of the percentage point until 2003. Only the years 2004-2005 brought a greater drop, which resulted from a significant increase in farmers' income.

Table 2

Average monthly per capita consumption of selected foodstuffs in households in 2005 (households of farmers = 100)

Foodstuffs	Overall	Including households of			
		employees	farmers	self-employed	retirees and pensioners
Bread and	83	75	100	69	98
cereals	113	100	100	103	141
Pasta	80	72	100	73	95
Meat					
High quality	104	100	100	119	106
cured meat	114	100	100	118	153
products	67	55	100	55	83
Fish	113	108	100	122	131
Milk	179	194	100	237	168
Cheese	111	96	100	129	146
Yoghurt	102	93	100	105	124
Butter	82	71	100	69	104
Fruit	79	69	100	62	100
Vegetables					
Potatoes	78	67	100	64	98
Sugar, jam,	112	100	100	100	135
honey and					
confectionery	232	267	100	276	186
Coffee					
Fruit and					
vegetables juices					

Source: Author, based on *Budzety gospodarstw domowych 2005* (*Household budgets in 2005*), GUS, Warszawa 2006.

Farmers' real income in 2004 increased by almost 9%, and in 2005 – by another 10%. The significantly improved income situation of this household group resulted from a marked income increase with respect to farming subsidies, mainly from the EU funds. The share of food expenditure in farm households is relatively high which, in general, results from lower income levels, as compared to the other groups, despite the fact that these increased in the years 2004-2005.

It seems interesting to compare consumption in farm households with other household patterns in this respect. Table 2 presents these, wherein the farm household is a basis for comparison. It shows that this group, as compared to the other ones, represents the highest levels as far as consumption of bread, meat, sugar and confectionery. On the other hand, consumption of high-quality cured meat products, yoghurt or fruit juice is at the lowest level. Hence a confirmation of the traditional consumption model: compote to replace water or juice, cottage cheese, (and, frequently, self-made, too[1]) instead of yoghurt.

It is worth noticing that farm households are characterised by a relatively high level of food consumption. This is, among others, connected with an increased demand for energy with respect to agricultural toil. High level of food consumption is observed also in households of pensioners and annuitants. It seems that in this case we observe so-called redistribution effect, i.e. transfer of food to children or even to grandchildren.

Table 3

Dynamics of average monthly per capita consumption of selected foodstuffs in households in 2005 (2000=100)

Foodstuffs	Overall	Including households of			
		employees	farmers	self-employed	retirees and pensioners
Bread and cereals	92	95	92	92	92
Pasta	112	107	118	114	107
Meat	100	101	101	97	102
High quality cured meat products	123	113	137	115	133
Fish	98	93	97	102	100
Milk	82	94	77	86	80
Cheese	105	106	97	103	105
Yoghurt	103	95	127	96	107
Butter	100	96	97	103	105
Fruit	91	90	88	91	95
Vegetables	94	99	93	97	93
Potatoes	85	89	88	89	85
Sugar, jam, honey and confectionery	90	94	113	106	115
Coffee	112	106	113	106	112
Fruit and vegetables juices	127	115	179	108	131

Source: Author, based on *Budzety gospodarstw domowych 2000 i 2004* (*Household Budgets in 2000 and 2005*), GUS, Warszawa 2001 and 2006.

The structure of household food consumption changed as well (Table 3). Consumption of the following items decreased: bread, fish (partly), milk, sugar, vegetables and fruit; on the other hand, consumption of high quality cured meat products, pasta, yoghurt (partly), coffee and fruit juice increased. Farm households experienced similar changes with respect to the structure of food consumption. However, consumption of pasta, high quality cured meat products, yoghurt and juice was growing at the fastest rate which, among others, resulted from the low starting level in 2000. One may assume that the traditional rural nutrition

[1] The highest consumption of sugar within this group (twice as large as in the case of the self-employed) indicates that farm households produce jam and compote on their own.

pattern, connected with consumption of large quantities of bread and potatoes, is being transformed slowly. The reason is that young farmers' real income is rising and their consumption patterns are shifting.

Falling consumption of fruit and vegetables is another interesting phenomenon. It is relatively high with respect to the analysed consumer group, although above mentioned articles are more available to farmers than to the others.

The determinants of food consumption

Food consumption in households depends largely on the income-price relationship. A great number of households indicate that they are unable to satisfy their needs with respect to food products. Farm households are particularly affected. Over 40% cannot afford to buy fish, whereas almost 16% do not buy dairy products for financial reasons (Table 4).

The above accounts, to some extent, for the low level of fish and yoghurt consumption in the households under scrutiny. Most of the types of households pointed out fishes as rather unavailable food product. Prices of fishes are relatively high in Poland in comparison with the prices for meat. They are more expensive, especially than chicken meat. In 2002-2003, one kilogram of cod used to be two times more expensive than one kilogram of chicken, and for the price of one kilogram of fresh trout one could buy three kilograms of chicken meat.

As a survey by the Instytut Zywnosci i Zywienia (National Food and Nutrition Institute, IZiZ) demonstrates, however, in spite of lower income in rural areas, the difference is not reflected in the population's overall well-being. One may assume that food consumed by village people was cheaper, but inclusive of similar levels of nutrients. (IZiZ, 2003).

A survey study by IZiZ demonstrates, too, that there are discrepancies between the household consumption level as measured by means of a household budget study on the one hand, and a survey study, on the other.

These concern, mainly, farmers and pensioners' households. According to the authors of the study, the consumption level of this group is overestimated, there is a food flow between these households and the employees' ones – a kind of redistribution occurs, towards children and grandchildren's households in particular. (IZiZ 2003).

Table 4

Households which could not afford to satisfy their needs with respect to selected foodstuffs in 2005 (w %)

Foodstuffs	Overall	Including households of			
		employees	farmers	self-employed	retirees and pensioners
Meat	22.6	17.9	21.8	8.7	40.4
Processed meat	22.5	16.5	25.0	8.1	39.8
Fish	34.3	26.9	42.3	16.0	52.9
Milk	6.4	4.7	6.7	2.7	13.3
Dairy	15.0	12,0	15.6	6.1	26.5
Butter and other edible fat	8.8	6.3	8.8	4.5	16.5
Fruit	19.0	15.7	13,5	4.9	32.9
Vegetables	12.0	8.9	7.7	3.8	23.9
Sugar	5.9	4.4	2.8	2.9	12.1
Confectionery	30.4	24.9	30.9	11.7	46.7
Food/drink stimulants	37.1	31.5	39.9	20.7	54.4

Source: Czapinski J., Panek T. (ed.), (2006), *Diagnoza Społeczna 2005* (*The 2005 Social Diagnosis*), Wyzsza Szkola Finansow i Zarzadzania (University of Finance and Management in Warsaw), Warszawa.

Another important factor to influence the consumption structure is the level of self-sufficiency with respect to food consumption (Table 5). Farm households consumed most food originating in their own farm.

Table 5

Self-sufficiency with respect to food consumption in households (in %)

Foodstuffs	Households					
	overall			farm		
	2002	2003	2004	2002	2003	2004
Meat and processed meat	10.9	10.7	9.6	56.9	57.4	54.8
Fresh milk	22.9	21.7	19.0	87.0	86.5	84.7
Cottage cheese	15.4	13.2	11.3	58.1	57.8	58.6
Eggs	23.4	21.4	19.7	82.8	80.7	79.3
Butter	2.9	2.8	3.3	15.2	15.1	22.6
Animal fat	13.6	16.7	13.6	69.2	62.5	61.5
Cereal products	1.9	1.8	1.3	7.3	7.9	6.8
Fruit	21.0	19.1	18.4	59.0	5.2	56.4
Vegetables	29.0	28.4	25.3	70.2	69.7	65.1
Potatoes	29.7	30.2	28.1	92.6	91.6	92.4

Source: Swietlik K. (2005): Popyt na żywność w latach 2004-2005 (Demand for food in 2004-2005). (in:) Biuletyn informacyjny ARR (Agricultural Market Agency Newsletter), No 12.

The worth of food produced on one's own farm constitutes more than one half of food that farmers' families consume, and with respect to certain articles – eggs, milk or potatoes – over 80-90%.

Summary, conclusion and recommendations

Based on the analysis as presented above, one may draw the following conclusions:

1. The share of expenditure on food in the disposable income of farm households is relatively high, which, mainly, results from these households' income (in 2005 the disposable income per person was 80% of the mean disposable income, and 62% of the self-employed household income). The sizeable share of food expenditures in the analysed households is also connected with an applied self-sufficiency estimation method.
2. As household budget studies demonstrate, the analysed household apply the so-called abundant nutrition model, based on bread, meat, milk and potatoes. The IZiZ surveys prove that consumption calculated by means of this method tends to be overestimated.
3. The period under scrutiny brought about changes within the structure of consumption in the analysed households: they purchase more superior goods, like yoghurt, fruit juice, high quality cured meat products.
4. The level of self-sufficiency in agriculture-related households was high, and it did not really change in the years 2002-2004 with respect to basic foodstuffs.
5. A significant part of the analysed household cannot afford to fully satisfy their catering needs, however the nutritive value of consumed articles is comparable to the one of other households.

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LEVEL OF CONSUMER ETHNOCENTRISM AMONG CITIZENS OF RURAL AREAS

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Abstract

Customer attitude to products, also those coming from other countries, has a significant influence on customers purchasing decisions. Ethnocentric tendencies which can be observed on global market are very interesting subject to be studied from the scientific point of view, as well as for the marketing practice.

The main research problem was to define the level of consumer ethnocentrism among respondents, who were chosen from citizens of rural areas. Studies conducted already in Poland showed that the level of consumer ethnocentrism is growing together with the age of consumers and it is connected mainly with purchasing of food.

In this paper an attempt of evaluation of ethnocentric attitudes and COO effect of Polish citizens of rural areas was taken on the example of citizens of a village in West-Pomeranian region – Zaton Dolna. The research tasks were to examine the correlations between consumer's ethnocentrism level and some demographic variables.

Customers make their own estimation of different groups of products based on their country-of-origin. That is why deciding on the localization of place of production and origin of the stocks is becoming very important for the companies. Another important thing is the knowledge about the stereotypes connected with particular countries and customers attitudes connected with them.

Key-words: consumer ethnocentrism, country-of-origin, rural areas

Introduction

The concept of consumer ethnocentrism originated in the more general concept of ethnocentrism, and can be defined as an attitude that one's own group (race or people) is superior. The concept is thus closely linked to patriotism and political-economic conservatism and has been studied in that context (Adorno et al., 1950).

A general definition of consumer ethnocentrism refers to the phenomenon of consumer preference for domestic products, or prejudice against imports. Consumer ethnocentrism represents the beliefs held by consumers about the appropriateness, indeed morality, of purchasing domestic-made products (Shimp and Sharma, 1987). Ethnocentrism may be interpreted as that purchasing imports is wrong, not only because it is unpatriotic, but also because it is detrimental to the economy and results in loss of jobs in industries threatened by imports. A series of validity tests conducted in the USA by Shimp and Sharma (1987) indicated that consumer ethnocentrism is moderately predictive of consumers' beliefs, attitudes, purchase intentions, and purchases. They also show that ethnocentric tendencies are significantly negatively correlated with attitudes towards foreign products and purchase intentions. Consumer patriotism or ethnocentrism proposes that nationalistic emotions affect attitudes about products and purchase intentions. In particular, consumer nationalism influences cognitive evaluations of the products and consequently affects purchase intent. This implies that nationalistic individuals will tend to perceive the quality of domestic products as higher than that of foreign products (Han, 1989). For example, societies with high consumer ethnocentrism are less favorable towards foreign products and consequently, less likely to purchase imported goods, even though they might be cheaper and / or of better quality than domestic products.

For non-ethnocentric consumers, foreign products should be evaluated on their own merit and on the basis of the utility and benefit they offer to consumers, rather than based on where they are manufactured or assembled.

Nowadays the globalization of world market has reached a point where it is sometimes difficult for consumers to determine with certainty the country of origin of the product. The accumulated research into the country-of-origin (COO) effect suggest that source-country effects on product evaluations vary with, among other factors:

- the technical complexity of the product,
- the degree of availability, familiarity, and perceived serviceability of foreign vs. domestic products,
- the beliefs held by consumers about the appropriateness of purchasing foreign-made products, i.e the degree of consumer ethnocentrism (Okechuku 1994).

Decision making by consumer

To make a decision about the product purchase, consumers use different cues and information. They can be divided into 2 groups – internal and external ones. Internal factors are the ones which are connected with physical attributes of a product, external ones are related to other product information such as brand, price, advertisement, word-of-mouth, country of origin.

The image customers associate with a given country-of-origin can be defined as "the picture, the reputation, the stereotypes that businesses and customers attach to products of a specific country" (Nagashima 1970). Country-related information or cues may be manifested in a variety of forms, the simplest one is the "made in" label. Other forms include the explicit inclusion of country information in brand name or implicit use of specific colors or marks in packaging.

The importance of the COO effect lies in its potential use by customers as an extrinsic cue in making purchase decisions.

Researchers have identified customer characteristics such as ethnocentrism (Shimp, Sharma, 1987) and customer patriotism (Han 1988) that may explain why certain customers are more likely to be interested in knowing a product's country of origin. Shimp and Sharma found that ethnocentric customers were more likely to rate foreign products negatively and less willing to purchase imported goods. They developed the 17-item consumer ethnocentric tendency scale – CETSCALE – to measure the propensity of consumers to consider the morality of buying domestic instead of foreign products.

Factors connected with customer ethnocentrism are:

- demographics: age, sex, education level, income level;
- psychosocial factors: patriotism, conservatism;
- others – the necessity of possessing the product, threats from the side of foreign products (Shimp, Sharma 1987).

The summarization of the results of the research studying correlation between consumer ethnocentrism and demographical attributes are presented in Table 1.

Table 1

Correlation between customer ethnocentrism and demographical attributes

Factor	Relationship	Authors
age	positive correlation	Han 1989, Rachocka 2001, Falkowski, Rożnowski, Witkowski, 1996, Wall 1988, Good, Huddleston 1995
sex	positive correlation - women	Han 1988, Good, Huddleston 1995
	positive correlation - men	Dornoff 1974, Wang 1978
	no correlation	Rachocka 2001, McLain, Sternquist 1991
city size	negative correlation	Falkowski, Rożnowski, Witkowski, 1996

Source: Own compilation.

Polish vs. foreign products

Market model of economy is not present in Poland for a very long time. Former closure of the market for the goods from abroad created the conviction about higher quality of imported goods. Nowadays people do not perceive big differences in the products quality between domestic vs. foreign products, especially when it comes to food products. Less and less people consider foreign products better than their domestic equivalents. Consumers also tend to search for information on origin of products.

In recent years Polish consumers have begun to buy local brands off their own bat. This is partly because home produced goods have improved vastly in quality, and also because they want to put the 'Made in Poland' label on the European market map. However a lot of consumers do not read carefully the labels and they rely only on the product's brand. When it is the Polish traditional brand, or when it sounds like Polish, they believe they buy domestic product.

Ethnocentric orientation in Poland is increasing together with economy development and a fear of the society of threats from the side of imported products. The question to be answered is if customer ethnocentrism and COO effect can cause a problem for development of foreign exchange. Knowing the specificity of ethnocentrism and the level of its intensity in demographical aspect has also important practical implications related with marketing activities planning.

Material and methods

In this paper an attempt of evaluation of ethnocentric attitudes and COO effect on Polish citizens of rural areas was taken on the example of citizens of a village in West-Pomeranian region – Zaton Dolna. The village is very small (60 citizens) but became known because of the natural park "Love Valley". It lies at the bank of Odra river, at the border with Germany. The study was conducted on consumers at the age of 26-76 years. Other research showed that younger consumers under age of 25, and older consumers over the age of 45 tended to be more ethnocentric than those between the ages of 25 and 45 (Imbert at al. 2003).

The main purpose of the study was to examine the extent to which consumer ethnocentrism is correlated with selected other variables. The variables examined were consumers' financial situation, sex, as well as their declarations about buying domestic and foreign products and factors important during purchase decisions.

The participants of the study were citizens of a village Zaton Dolna. Representativeness was not a major concern, because the purpose of the study was to test a set of new theoretical contentions. The attempt was made to examine 60 citizens of the village (100% of the population). Responses were collected only from 13 respondents (21.7%). The final sample consisted of 7 females (54%) and 6 males (46%). The age of respondents was within the range of 26-76 years.

Traditionally, consumer ethnocentrism has been measured using the CETSCALE, a paper and pencil measure that asks consumers to report on their beliefs toward buying domestic products. Consumers were asked about the extent to which they agree with the 17 items on the CETSCALE. Items were scored on a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). Scores on the CETSCALE measure were summarized to create a single variable measuring consumer ethnocentrism.

CETSCALE has been widely used in marketing and has purportedly been validated across cultures to capture people's belief regarding their interest in own-country brand preference. In CETSCALE, 5-point Likert scale was used, 17 questions were asked, yielding a potential minimum score of 17 and a maximum score of 85 for each individual. The total score might vary between 17 and 85.

Respondents were also asked some questions about their preferences when making buying decisions.

Table 2 describes the sample population in terms of demographic variables.

Table 2

Demographic profile of the respondents (N=13)

Variable		Frequency	Percentage (%)
Age:	24 or less	0	0
	25-40	7	54
	41 or more	6	46
Gender:	female	7	54
	male	6	46
Financial situation:	very poor	0	0
	poor	0	0
	average	10	77
	good	3	23
	very good	0	0

Source: Own studies.

Results and discussion

In this study, consumer ethnocentrism was measured by the CETSCALE which was subjected to a reliability analysis. The results of the reliability analysis are given in Table 3 which shows overall reliability 0.975 (Cronbach's alpha) which can be considered a very high reliability coefficient. It is clearly above the limit of 0.50 suggested by Fornell and Larcker (1981) as a minimum level to support the consistency among items in a scale.

Table 3

17-item CETSCALE applied to Polish consumers[1]

	Items	Reliability[2]
1.	Polish people should always buy Polish products instead of imports	0.973
2.	Only those products that are unavailable in Poland should be imported	0.973
3.	Buy Polish products. Keep Polish working	0.976
4.	Polish products, first, last, and forever	0.973
5.	Purchasing foreign-made products is un-Polish	0.980
6.	It is not right to purchase foreign products, because it puts Polish people out of a job	0.972
7.	A real Polish should always buy Polish products	0.972
8.	We should purchase products manufactured in Poland instead of letting other countries get rich from us	0.973
9.	It is always best to purchase Polish products	0.971
10.	There should be very little trading or purchasing of goods from other countries unless out of necessity	0.973
11.	Polish should not buy foreign products, because this hurts Polish business and causes unemployment	0.973
12.	Curbs should be put on all imports	0.973
13.	It may cost me in the long run but I prefer to support Polish products	0.974
14.	Foreigners should not be allowed to put their products on our market	0.974
15.	Foreign products should be taxed heavily to reduce their entry into Poland	0.974
16.	We should buy from foreign countries only those products that we cannot obtain within our own country	0.973
17.	Polish consumers who purchase products made in other countries are responsible for putting their fellow Polish out of work	0.971

Source: Own studies.

Based on the results of the reliability analysis, it can be assumed that all 17 items used are measuring the same construct (ethnocentrism) and, therefore, a summative measure can be used to represent the ethnocentrism score of the respondents.

The mean scale value of CETSCALE is the predictor of the intensity of ethnocentrism (Shimp and Sharma 1987). A higher mean scale value indicates higher consumer ethnocentrism. The mean value for the present study was 55.77, with a standard deviation of 21.01. This result can be compared to the results of other study performed by the author of this paper – consumer ethnocentrism among students, citizens of Szczecin was lower – 46.26, with a standard deviation of 10.84. This comparison shows that consumers from rural areas are more ethnocentric than people from urban areas.

Average level of consumer ethnocentrism for females – citizens of Zaton Dolna - was 46.14; average level for males – 53.33, which shows that males from this village are more ethnocentric than women. Comparing to the results of the study performed on students – females from Szczecin were more ethnocentric (47.25) than males (44.01). This specification shows the place of living is correlated with consumer's level of ethnocentrism – rural areas citizens were more ethnocentric; especially men.

[1] Response format is five-point Liker-type scale (strongly agree = 5; strongly disagree = 1).
[2] Calculated using Cronbach's Alpha (alpha if item deleted). Overall alpha=0.975.

As the objective of this paper is to provide preliminary indications of the possible relationships between constructs and their directions, simple correlations on the variables were run.

On figures 1-3 there are presented connections between consumer ethnocentrism level and some demographic variables. They show that consumer ethnocentrism level in the investigated group in negatively correlated with the age of respondents. It shows also that the better situation of the respondent, the lower is the consumer ethnocentrism of that person. It can be explained that the respondents perceive foreign products as more expensive than domestic ones, so better financial situation lets them buy foreign products. Fig 3. shows that women from the investigated group are more likely to be ethnocentric than men. It can be also explained that usually women buy products necessary for the household and they make buying decisions more often when it comes to buying typical everyday products.

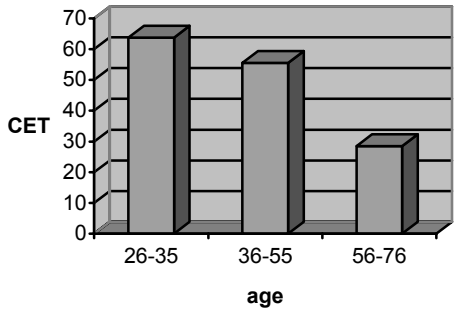

Figure 1. Consumer ethnocentrism (CET) vs. age of respondents

Source : Own studies.

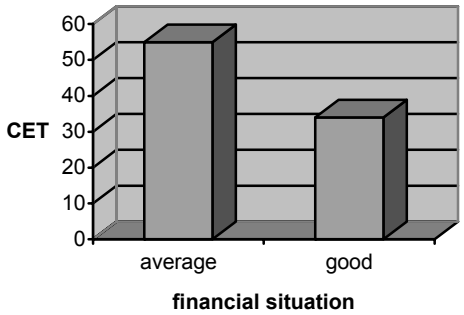

Figure 2. Consumer ethnocentrism (CET) vs. financial situation of respondents

Source : Own studies.

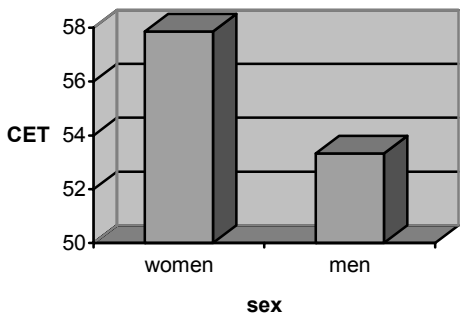

Figure 3. Consumer ethnocentrism (CET) vs. sex of respondents

Source : Own studies.

The findings of the Pearson correlations are summarized in Table 4. Pearson correlation analysis of the demographic factors extracted and the ethnocentrism score indicated that none of them (sex, age, financial situation) can be considered as correlated with a level of consumer ethnocentrism.

The conducted research showed that respondents with high levels of consumer ethnocentrism were more likely to declare that they prefer Polish products and that they look for information about country-of-origin when buying. That shows that their overall attitude to domestic products is strongly connected with their purchasing habits and decisions.

Table 4

Correlations between the study constructs (N=13)

	Gender	Age	Financial situation	CET	Preference of Polish products	Importance of COO	Factor important when buying		
							Quality	Price	Domestic origin
Gender	1.0000	-0.2601	0.2254	-0.1117	-0.0514	-0.4047	0.0329	0.0514	-0.1409
	p= ---	p=0.391	p=0.459	p=0.716	p=0.867	p=0.170	p=0.915	p=0.867	p=0.646
Age		1.0000	0.1167	-0.5053	-0.4858	-0.1462	0.3382	-0.3412	-0.4480
		p= ---	p=0.704	p=0.078	p=0.092	p=0.634	p=0.258	p=0.254	p=0.125
Financial situation			1.0000	0.0786	-0.0304	-0.0171	-0.2335	0.0304	0.1333
			p= ---	p=0.799	p=0.921	p=0.956	p=0.443	p=0.921	p=0.664
CET				1.0000	0.9088	0.6591	0.1316	0.3378	0.5127
				p= ---	p=0.000	p=0.014	p=0.668	p=0.259	p=0.073
Preference of Polish products					1.0000	0.5620	0.2843	0.4444	0.3651
					p= ---	p=0.046	p=0.347	p=0.128	p=0.220
Importance of COO						1.0000	0.4193	-0.1561	0.4275
						p= ---	p=0.154	p=0.611	p=0.145
Quality							1.0000	-0.2843	-0.2335
							p= ---	p=0.347	p=0.443
Price								1.0000	-0.3651
								p= ---	p=0.220
Domestic origin									1.0000
									p= ---

Source: Own studies.

Conclusions

The research showed that there is no important correlation between age and sex of respondent and level of his ethnocentrism. But comparing the results with prior research it seems like citizens living in rural areas tend to be more ethnocentric than citizens of urban areas. The result of ethnocentrism measure is consistent with their declarations in this matter.

The conclusion should be considered in planning marketing activities for different regions of Poland. It seems that it won't have impact on strategies of big companies but for sure small, medium, local firms could consider marketing their products emphasizing their Polish origin when aiming at people from villages.

Knowing the specificity of ethnocentrism and the level of its intensity in different demographical aspects (gender, age, education level, income) has important practical implications related with marketing activities planning.

Information generated from studies such as this one can provide a basis for a better understanding of the micro-environment of countries at various level of economic development as well as their consumer markets and can have implications for both marketing management and the development of the knowledge on consumer behavior in the market.

Further research in this area is necessary and desirable. Specifically, future research need to examine these issue at the country level. While the study serves as an initial investigation, limited conclusions can be drawn due to sample limitations.

The international trade is becoming nowadays the central part of world economy, thus it has been marked that the necessity of doing research of customer attitudes connected with purchasing domestic/foreign products is very high. The conducted study showed that the perception of the brand is becoming more and more important for making decisions by the consumers. Producers try to stress national character of the products – according to the rule "think globally, act locally". Such a tendency will probably continue.

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