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**Proceedings of the  
International Scientific conference**

**“ECONOMIC SCIENCE FOR RURAL  
DEVELOPMENT”**

*Agriculture  
Regional development*

**N<sup>o</sup> 10**

**Jelgava  
2006**

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#### **TIME SCHEDULE OF THE CONFERENCE:**

- Preparation from – September 2005 to April 2006;
- Process – the 26<sup>th</sup> and 27<sup>th</sup> April 2006

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**Izdots ar Latvijas Republikas Zemkopības ministrijas atbalstu**

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Katrs šajā izdevumā ievietotais raksts tika pakļauts zinātniskai, tai skaitā starptautiskai recenzēšanai.

Rakstu autoriem recenzenti ir anonīmi.

Sekojošie 55 recenzenti no sešu valstu 18 zinātniskām un akadēmiskām institūcijām, uzrakstīja 127 recenzijas.

*Each article included into the Proceedings was subjected to a scientific, including international review.*

*All reviewers are anonymous for the authors of the articles.*

*The following 55 reviewers from 18 scientific and academic institutions of six countries have written 127 reviews.*

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## **Zinātnisko vadītāju vērtējumi**

## ***Evaluation of the Scientific Advisors***

**Doktorantu zinātniskie vadītāji iesniedza vērtējumus par savu doktorantu iesniegto darbu zinātnisko kvalitāti un ieteikumus to publicēšanai:**

***The scientific advisors of PhD students submitted the evaluation on the scientific quality of the papers presented by their PhD students and recommendations for the publication of these papers:***

|                            |                          |
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| <b>Jānis ĀBOLIŅŠ,</b>      | Dr.phys., profesors      |

## Pateicības

Pirmā un īpašā pateicība Latvijas Republikas Zemkopības ministrijas valsts sekretārei, ekonomikas doktorei Laimdotai Straujumai un ministram Mārtiņam Rozem par starptautiskā zinātniskā pasākuma *Ekonomikas zinātne – lauku attīstībai* augsta līmeņa nepieciešamības izpratni, atbalstu un personīgu piedalīšanos.

Pateicība ministrijas un Lauku atbalsta dienesta personālam, kuri atsaucīgi pildīja savas funkcijas atbalsta īstenošanas procesā.

Pateicība LLU Lietu pārvaldniekam Jānim Spruktam par veicinošu attieksmi starptautiskā pasākuma sagatavošanā.

Pateicība ekonomikas doktorei Gunitai Mazūrei par palīdzību starptautiskās konferences sagatavošanā.

Par atsaucīgu darbu zinātnisko rakstu kvalitātes veicināšanā sevišķa pateicība recenzentiem – ekonomikas doktorei Īrijai Vītolai, ekonomikas doktorei Veronikai Buģinai, ekonomikas doktorei Anitai Auziņai, ekonomikas doktorei Ainai Muškai, ekonomikas doktorei Ingrīdai Jakušonokai, ekonomikas doktoram Jānim Kaktiņam, lauksaimniecības doktoram Voldemāram Strīķim un pārējiem recenzentiem Varšavā, Rīgā, Vīnē, Kauņā, Venēcijā, Padovā, Krakovā, Jelgavā, Minskā, Ščecinā, Siguldā, Barnovičos, Ulbrokā, Poznaņā.

Pateicība doktorantei Linda Jancei un maģistrantei Agnesei Radželei par centīgu, perfektu, radošu darbu starptautiskā pasākuma un zinātniskās konferences sagatavošanas maratonā

Pateicība visiem citiem Ekonomikas fakultātes darbiniekiem un pakalpojumu firmu personālam, kuri apzinās savu perfektu darbu sev uzticēto pienākumu veikšanā starptautiskā pasākuma sagatavošanas procesā.

Programmas komitejas vārdā

- starptautiskā zinātniskā pasākuma atbildīgais koordinators, prof. K.Špoģis

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*Thanks to Linda Jance, a PhD student and Agnese Radžele, a Master's student for the diligent, perfect, and creative work during the Marathon of the arrangement of the international event and scientific conference.*

*Thanks to all the staff of the Faculty of Economics and employees of the service companies who acknowledge their perfect work in the implementation of their duties under the arrangement process of an international event.*

*On behalf of the Programme Committee*

*- Kazimirs Špoģis, a professor, coordinator-in-charge of the international scientific conference*

## Priekšvārds

Starptautiskās zinātniskā daudzu valstu augstskolu un vairāku zinātņu akadēmiju agrāro ekonomistu un vadības zinātnes speciālistu konference Jelgavā, Latvijas Lauksaimniecības universitātes Ekonomikas fakultātes telpās, jau kļuvusi par stabilu, regulāru ikgadēju, aprīļa mēneša pasākumu.

Šajā – septītajā pasākumā piedalās zinātniskā un akadēmiskā personāla pārstāvji – profesori, doktori, doktoranti, aspiranti, zinātņu kandidāti, docenti, pētnieki, akadēmiķi, korespondētājlocekļi, asistenti, maģistranti un maģistri no daudzām augstskolām un zinātniskiem institūtiem:

- Latvijas Republikas Zemkopības ministrijas;
- Latvijas Lauksaimniecības universitātes;
- Latvijas Universitātes;
- Lietuvas Lauksaimniecības universitātes;
- Austrijas Lauksaimniecības ekonomikas federālā institūta;
- Itālijas – Padovas universitātes;
- Baltkrievijas nacionālās zinātņu akadēmijas;
- Latvijas lauksaimniecības un meža zinātņu akadēmijas;
- Kauņas Tehnoloģiskās universitātes;
- Varšavas Lauksaimniecības universitātes;
- Krakovas Lauksaimniecības universitātes;
- Ščecinas Lauksaimniecības universitātes;
- Baranoviču Valsts Lauksaimniecības universitātes;
- Poznaņas Lauksaimniecības universitātes;
- Eiropas Padomes, Briselē;
- Venēcijas universitātes;
- Baltkrievijas valsts lauksaimniecības akadēmijas;
- Latvijas Valsts agrārās ekonomikas institūta;
- Latvijas Lauksaimniecības mehanizācijas institūta;
- Latvijas Lauksaimniecības statūtsabiedrību asociācijas;
- Lauku atbalsta dienesta.

Konferences programmas starptautiskā komiteja noteica augstas prasības referātu kvalitātei. Lai to sasniegtu katrs iesniegtais referāts tika pakļauts neatkarīgai, zinātniskai, tai skaitā starptautiskai recenzēšanai. Lai panāktu iespējami objektīvu, principiālu, neatkarīgu katra referāta vispusīgu izvērtēšanu pēc desmit kritērijiem, recenzenti referātu (rakstu) autoriem bija anonīmi, izņemot retus, atsevišķus gadījumus, kad recenzents vēlējās

## Foreword

*The international scientific conference attended by agrarian economists and management specialists from many universities and several academies of science and held in April, the premises of the Faculty of Economics, Latvia University of Agriculture, in Jelgava has already become a stable, regular, and annual event.*

*This – the seventh conference is attended by the representatives of scientific and academic staff – professors, doctors, PhD students, research students, candidates of science, assistant professors, researchers, academicians, corresponding members, assistants, graduate students, and Masters of Science from many higher education and scientific institutions:*

- Ministry of Agriculture Republic of Latvia
- Latvia University of Agriculture
- University of Latvia
- Lithuanian University of Agriculture
- Austria Federal Institute of Agricultural Economics, Vienna
- Università di Padova
- Center of Agrarian Economy of Institute of Economy of National Academy of Science Belarus
- Academy of Agricultural and Forestry Science of Latvia
- Kaunas University of Technology
- Agricultural university of Warsaw
- Agricultural University of Krakow
- Agriculture University of Szczecin
- Барановичский государственный сельскохозяйственный университет
- Agricultural University of Poznan
- Council of Europe
- University Ca Foscari of Venecia
- Belarussian State Agricultural Academy
- Latvian State Agrarian Economy Institute
- Research Institute of Agricultural Machinery
- Association der Landwirtschaftsbetriebe Lettlands
- Rural Support Service

*The international conference programme committee has set high requirements for the quality of papers. Therefore each submitted paper was subjected to an independent, scientific, including international, review. To achieve the possibly un-biased, fundamental, independent, and detailed evaluation of each article according to ten criteria, the reviewers were anonymous to the*

autoram paskaidrot savus ieteikumus raksta kvalitātes uzlabošanai.

Ievērojot un izpildot recenzentu ieteikumus daudzu rakstu saturs un noformējums tika būtiski uzlabots.

Objektīvo recenzentu ieteikumu un stingro starptautisko prasību neizpildes dēļ vairāki referāti (raksti) netika iekļauti šajā starptautiskajā zinātniskajā izdevumā „Ekonomikas zinātne – lauku attīstībai”.

Starptautiskā redakolēģija publicēšanai pavisam pieņēma 83 autoru 65 rakstus.

Visi raksti sakārtoti divos laidienos: laidienā Nr. 10 ievietoti raksti – pētījumu rezultāti par agrāro un reģionālo ekonomiku, bet laidienā Nr. 11 – finansēšanai un diversifikācijai veltīto pētījumu rezultāti.

Kopumā par šo zinātnisko rakstu starptautiskā izdevuma abiem laidieniem var teikt, ka tie atbilst augstākajiem standartiem:

- programmas komitejā ir 6 valstu augstskolu pārstāvji;
- visi izdevumā ievietojamie referātu pilnie teksti gatavoti atbilstoši vispārpieņemtiem zinātnisko rakstu sagatavošanas noteikumiem;
- izdevumā ievietojamie raksti starptautiski anonīmi recenzēti, t.i., autori recenzentus nezina;
- 55 recenzenti no sešu valstu astoņpadsmit augstskolām un zinātniskiem institūtiem veikuši 127 recenzijas;
- izdevumam ir starptautiska redakolēģija, kurā darbojas konferences dalībvalstu augstskolu zinātnieki;
- izdevums ir regulārs un laidieni tiek numurēti: - šogad tiek izdoti 10. un 11. laidieni;
- izdevumā dominē angļu valodā gatavoti raksti, bet citās valodās iesniegtiem rakstiem angļu valodā ir dublēti kopsavilkumi, virsraksti un tabulu vai attēlu teksti;
- šogad izdevums ir arī elektroniskā formā, ievietots konferences mājas lapā un izmantojams visā pasaulē.

Ceram, ka šie abi zinātniskie izdevumi noderēs arī praktiskajiem lauksaimniekiem, konsultatīvo dienestu darbam, studiju procesā, pētniecības tālākā darbā.

#### **Starptautiskā redakolēģija**

*authors of the articles (papers), with the exception of rare and individual cases when the reviewer wanted to explain his/her proposals to the author of the paper to improve its quality.*

*The observance and fulfilment of the recommendations of the reviewers allowed to improve significantly the content and design of many articles.*

*Due to un-biased recommendations of the reviewers and non-fulfilment of the high international requirements several papers (articles) were not included into the proceedings of the international scientific conference “Economic Science for Rural Development”.*

*Totally the international Editorial Board accepted for the publication 64 papers by 80 authors.*

*All the papers are arranged in two volumes: Volume 10 comprises the papers – the research results on agrarian and regional economy, and Volume 11 includes the research results on financial and diversification aspects.*

*In general the two Volumes of the Proceedings comply with the highest standards:*

- *the Programme Committee comprises the representatives of higher education institutions from 6 countries;*
- *all the proceedings to be published in the edition are prepared in compliance with generally accepted requirements set for scientific papers;*
- *the papers to be published in the edition are internationally and anonymously reviewed, i.e., the authors do not know the names of the reviewers;*
- *55 reviewers from 18 higher education and scientific institutions of six countries have written 127 reviews;*
- *the edition has an international Editorial Board consisting of the scientists from the universities of the conference member states;*
- *the edition is regular and the volumes are numbered: Volumes 10 and 11 are published this year;*
- *the papers written in English prevail in the edition, while the papers submitted in other languages give the English version for the summaries, titles and texts for tables and/or figures;*
- *this year the edition is available also electronically on the conference web site, thus it can be used worldwide.*

*We hope that the two scientific editions are useful also for farmers, consulting services, studies and research.*

***International Editorial Board***

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## AGRICULTURE

### Problems concerning balancing of interests of agricultural production and rural population density in the financial aid context

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#### *Abstract*

The article reviews the research results concerning correlations between productivity of the main cultivated plants – cereals and the size of sowings areas at farms, concerning development of the cereal-growers' farm structure and the concentration of the sector, concentration processes of dairy and pig-breeding have been analysed, coherence between results of the farms' activities and their economical size analysed, as well as the amount of financial aid, and efficiency of subsidies assessed in small and larger farms in different regions.

It has been discovered that the large and larger farms ensure higher work efficiency, higher production quality indicators, and more effective use of financial aid.

Significant differences between regions have been discovered as regards efficiency of usage of financial aid: the most effective are commercial farms in the main region – Zemgale, including Jelgava, Dobele, Bauska, as well as Saldus and Tukums districts.

**Key word:** agriculture, production, regions, subsidies.

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#### Introduction

##### **Justification of the choice of the topic**

The choice of the research topic covered by this article has been determined by several arguments, but most important ones were the three following:

1. Necessity to provide maximum support for effective performance and development of commercial agriculture enterprises;
2. Necessity to create a favourable social and economic environment for people living in rural areas of the entire territory of Latvia, regarding the rural development strategy accepted by the heads of the European Union Member states during the Lisbon Summit.
3. the urge to create a European Union financial aid strategy that would give maximum economic effect for the Latvian agriculture, forestry and economy in general.

These problems are being widely discussed both among scientists (Bratka, 2005; Priekulis,

2005; Špoģis & Co, 2005, 2004; Miglavs, 2005, etc), the farmers' economic self-government organizations (Farmers' Saeima, 2005; Bruss, Jansons, 2005; Goba, 2005, etc) and state administration institutions (Ministry of Agriculture, 2005; Pilvere, 2005; Krūmiņš, 2005, and others).

Altogether these motivations in substance already contain a **hypothesis**, that giving maximum priority for the EUROPEAN UNION financial aid to be used for development of agricultural production would facilitate development of strong, modern agricultural enterprises and the usage of the Latvian earth and land for the benefit of the people and economy of the country in general, thus raising the social and economical level of Latvia to reach those of the developed countries.

**Research objectives** have been determined in order to test the hypothesis: - to find out the coherence between the economic capacity of agricultural farms and efficiency of the financial aid usage.

The following **tasks** have been performed to reach the objectives:

- to determine correlation between productivity of the main cultivated plants and the size of areas of sowings or the size of farms;
- to analyse structural changes of cereal farms and grain production possibilities in different farm groups;
- to search dairy and pig-breeding concentration processes;
- to evaluate dependency of the economic results of the farms from their economic size;
- to determine and evaluate the effects of the financial aid in farms of different size.

#### Materials and methods employed

In the research official statistics data, resources of the Ministry of Agriculture data base and information material resources have been used, as well as analysis of results of agricultural farms' activities (SUDAT), performed by the Institute of Agrarian Economics, financed by the Ministry of Agriculture, and special literature and information published in periodicals.

Research methods employed are adequate to the research tasks:

- for determining the coherence between the productivity of the cultivated plants and the farm's producing capacity or size, the farms have been grouped and a dynamic timeline (*laikrindas*) analysis of each group performed;
- in order to research the concentration process of the main crop farming sector – cultivation of grain also grouping of farms for a seven years

period and forecasting for the next ten years has been performed;

- in order to determine and analyse the dairy and pig-breeding concentration processes, the farms have been divided into four groups, dynamics have been evaluated for a four year period and based on that an express evaluation for further development of the processes has been made.

■ In order to determine the impact of the farm's size on its efficiency the farms have been split in four groups – very small ones (4 ELV), small (8-16 ELV), larger (100-250 ELV) and the large ones - > 2501 ELV

■ Analysis of the farms' assets has been performed by similar groups of farms;

■ Analysis of the subsidy efficiency has been made in small (8-16 ELV) and larger (40-100 ELV) whereas the two most different regions have been included in both groups – Latgale and Zemgale.

## Results and discussion

### 1. Efficiency the grain cultivation concentration

In order to determine the impact of concentration of the grain cultivation, productivity of grain in seven farm groups has been analysed (table 1), dynamics of the number of farms – in three productivity levels analysed (table 2), in seven year period (table 3) and concentration process of grain growing areas during the time period 1998-2015 (table 4).

Table 1

### Areas of sowings of grain and their productivity in the Latvian farms during the period 2001-2004

| Area of sowings of grain by the farm groups, ha | Productivity of grain, t h <sup>-1</sup> |      |      |      |
|-------------------------------------------------|------------------------------------------|------|------|------|
|                                                 | 2001                                     | 2002 | 2003 | 2004 |
| <10.0                                           | 1.79                                     | 1.87 | 1.59 | 2.20 |
| 10.1-20.0                                       | 1.92                                     | 2.01 | 1.75 | 2.35 |
| 20.1-50.0                                       | 2.04                                     | 2.27 | 1.91 | 2.48 |
| 50.1-100.0                                      | 2.03                                     | 2.48 | 2.10 | 2.68 |
| 100.1-200.0                                     | 2.24                                     | 2.69 | 2.34 | 2.87 |
| 200.1-300.0                                     | 2.27                                     | 2.88 | 2.40 | 3.15 |
| >300.0                                          | 2.57                                     | 3.32 | 2.89 | 3.76 |

Source: CSB data organized by the author.

Table-1 data lead to several conclusions and scientific generalizations:

- the grain productivity level has a strong, permanent and positive correlation with the size of grain sowings areas in farms: - the bigger is the farm or the area of sowings, the higher agro-technological level of the production;
- grain productivity in the large farms in 2001 is almost for 43.6% higher than in the small ones of the group of the smallest farms, but in the most recent years this difference has reached even 70-80%;
- the highest productivity increase has taken place in the group of the largest farms.

Assessment of the importance of the data displayed in table 1 for elaboration of agricultural support strategy lead to a logical necessity to find out – how many such rationally operating farming enterprises and ventures are there, which reap good and economically effective harvests.

Data and calculations needed for such research are displayed in table 2.

As one can see from table 2:

- the number of effective grain cultivating farms that harvest  $<4.0 \text{ ha}^{-1}$  grain is relatively small, but the absolute number can increase constantly;
- the number of average operation level with productivity within the limits of  $3-4 \text{ ha}^{-1}$  has been stable, but in foreseeable future the number of farms of this particular group will not increase, because production of grain will be concentrated in the larger farms, which can fully engage modern technologies, highly productive computerized machines and high-quality varieties with potential productivity  $10-12 \text{ ha}^{-1}$ ;

- the number of the small farms primitively growing small amounts of grain, incapable of producing of an economically effective harvest, is decreasing rapidly.

Table 3 leads to the following conclusions:

- the speed of decreasing of the number of the grain cultivating farms is slowing down;
- the number of the largest grain cultivating farms constantly and quite rapidly increases, because they absorb the smaller ( $50-100 \text{ ha}$ ) farms;
- the number of the third group grain farms ( $10-50 \text{ ha}$ ) constantly and rapidly decreases and even faster decreases the number of the tiny, semi-natural farms producing grain for their own poultry and pigs.

The concentration process of the grain sowings is best described by the data and calculations of dynamic timelines displayed in table 4:

- during the analysed period – over 6 years the total area of grain sowings in large farms has doubled, reaching the proportion of 46-47% of the all farm's territory.
- Evaluating directions and speed of processes, as well as the impact of the EUROPEAN UNION financial support, three fourths of all grain sowings in Latvia will be concentrated in such farms within the next ten years.
- In the group of the small and smaller grain farmers ( $50-100 \text{ ha}$ ) the 10-12% proportion of area can remain the same in the future years.

Calculations have been made based on assumption that the grain sowing area will increase up to 500 000 hectares, but as the productivity increases the total harvest of grain can significantly increase because the grain will be used more widely in power industry – in production of fuel and heat.

Table 2

### Dynamics of the number of grain cultivating farms by productivity groups In Latvia during the period 1998-2015

| Grain harvest<br>$\text{t ha}^{-1}$                                          | 1998  | 1999  | 2000  | 2001  | 2002  | Forecast |       |
|------------------------------------------------------------------------------|-------|-------|-------|-------|-------|----------|-------|
|                                                                              |       |       |       |       |       | 2010     | 2015  |
| $<4.0$                                                                       | 1514  | 1400  | 1305  | 1140  | 1619  | 1650     | 1800  |
| Proportion of commercial farms with normal productivity, %                   | 1.7   | 1.8   | 2.0   | 2.0   | 3.4   | 5.5      | 8.6   |
| <b>4.0-3.0</b>                                                               | 4646  | 4700  | 4769  | 4044  | 6507  | 3500     | 3000  |
| <b><math>&gt;3.0</math></b>                                                  | 83961 | 70000 | 59976 | 51249 | 38984 | 24850    | 16200 |
| Proportion of a low ( $>3.0 \text{ t ha}^{-1}$ ) productivity level farms, % | 93.2  | 92.0  | 97.78 | 90.8  | 82.7  | 82.8     | 77.1  |

Source: The Author's calculations based on the CSB data.

Table 3

**Dynamics of the number and structure of grain cultivating farms in Latvia, for the period of 1998-2004**

| Indicators                                                           | Number of farms in particular groups |               |               |               | Forecast of the number of farms |               |
|----------------------------------------------------------------------|--------------------------------------|---------------|---------------|---------------|---------------------------------|---------------|
|                                                                      | 1998                                 | 2001          | 2003          | 2004          | 2010                            | 1015          |
| <b>All grain cultivating farms</b>                                   | <b>91754</b>                         | <b>64083</b>  | <b>51735</b>  | <b>47110</b>  | <b>30000</b>                    | <b>21000</b>  |
| Decrease of the number chain of the grain cultivating farms per year | -                                    | -9224         | -6174         | -4625         | -2852                           | -1800         |
| The speed of the chain decrease average per year, %                  | -                                    | 10.0          | 9.6           | 8.9           | 6.1                             | 6.0           |
| <b>Size of the grain sowings in the farm &gt;100 ha</b>              | <b>380</b>                           | <b>590</b>    | <b>665</b>    | <b>722</b>    | <b>900</b>                      | <b>1000</b>   |
| Chain increase of such farms per year                                | -                                    | 70            | 37            | 57            | 30                              | 20            |
| The speed of chain increase average per year, %                      | -                                    | 18.4          | 15.7          | 8.6           | 4.1                             | 2.2           |
| <b>Size of grain sowings area in a farm:</b>                         |                                      |               |               |               |                                 |               |
| <b>20.1-100 ha</b>                                                   | <b>770</b>                           | <b>713</b>    | <b>720</b>    | <b>717</b>    | <b>750</b>                      | <b>800</b>    |
| <b>10.1-50 ha</b>                                                    | <b>8853</b>                          | <b>6157</b>   | <b>4395</b>   | <b>4297</b>   | <b>3500</b>                     | <b>3000</b>   |
| <b>≤ 10 ha</b>                                                       | <b>81 751</b>                        | <b>56 623</b> | <b>45 955</b> | <b>41 374</b> | <b>24 850</b>                   | <b>16 200</b> |

Source: CSB data and the author's calculations.

Table 4

**Size of grain sowing areas in different capacity farms In Latvia during the period of 1998-2015**

| Size of grain sowings in farm, ha | Grain sowing areas and their proportions |        |        |        | Logically constructive forecast |        |
|-----------------------------------|------------------------------------------|--------|--------|--------|---------------------------------|--------|
|                                   | 1998                                     | 2001   | 2003   | 2004   | 2010                            | 2015   |
| >100                              | 108052                                   | 161296 | 187045 | 203077 | 280000                          | 375000 |
| Proportion, %                     | 22.0                                     | 36.4   | 43.7   | 46.5   | 60.9                            | 75.0   |
| Chain increase, average per year  | -                                        | 17748  | 12874  | 16032  | 12820                           | 19000  |
| Speed of the chain increase, %    | -                                        | 16.4   | 8.0    | 8.6    | 6.3                             | 6.8    |
| 50-100                            | 52853                                    | 48473  | 50359  | 51684  | 55000                           | 60000  |
| Proportion, %                     | 10.8                                     | 10.9   | 11.7   | 11.9   | 12.0                            | 12.0   |
| Total area of grain sowings, ha   | 490445                                   | 443144 | 428148 | 436298 | 460000                          | 500000 |

Source: CSB data and the author's calculations.

**2. Concentration in animal breeding sectors**

In the result of multiform impact of the EUROPEAN UNION the situation in organization and economics of dairy sector can rapidly and seriously change (table 5).

The data displayed in the table 5 provides basis for several conclusions:

- during the most recent years the number

of the large dairy farms had stabilised but now it can increase significantly and the number of milk cows in these farms can be doubled, at the same time increasing the milk yield;

- a proof of a demonstrative progress is the rapidly increasing number of farms with 50-100 cows and also a constant increase of the number and proportion of cows in such farms;

■ the increase of the smaller dairy farms (with 10-49 cows) and small farms (with  $\geq 10$  cows) can also be regarded positively at the same time as the number of holders of 1-5 cows decrease rapidly.

Table 5

**Concentration process of the dairy sector in the farming enterprises and business societies of Latvia**

| Indicators                                               | 2001  | 2002  | 2003  | 2004  | 2015<br>(forecast) |
|----------------------------------------------------------|-------|-------|-------|-------|--------------------|
| Number of farms with $\geq 100$ cows                     | 133   | 99    | 105   | 103   | 150                |
| In such farms:<br>-the number of cows                    | 28452 | 25372 | 26101 | 25883 | 50000              |
| -proportion of cows % from the total<br>number of cattle | 13.6  | 12.5  | 14.1  | 14.0  | 25.0               |
| Number of farms with 50-99 cows                          | 85    | 102   | 124   | 147   | 200                |
| In such farms:<br>-the number of cows                    | 6251  | 7617  | 8565  | 9985  | 16000              |
| -proportion of cows,%                                    | 3.0   | 3.7   | 4.6   | 5.4   | 8.0                |
| Number of farms with 10-49 cows                          | 1609  | 1537  | 1943  | 2034  | 3000               |
| In such farms:<br>-the number of cows                    | 27177 | 30748 | 34396 | 36001 | 75000              |
| -proportion of cows, %                                   | 12.9  | 15.1  | 18.7  | 19.4  | 37.5               |
| number of cows in farms with $\geq 10$ cows              | 61880 | 63737 | 69062 | 71869 | 141000             |
| proportion of cows,% of such farms                       | 29.5  | 31.4  | 37.4  | 38.8  | 70.5               |

Source: CSB data and the author's calculations.

Table 6

**Concentration process of pig-breeding in farming enterprises and business entities in Latvia**

| Indicators                            | 2001   | 2002   | 2003   | 2004   | 2015<br>forecast |
|---------------------------------------|--------|--------|--------|--------|------------------|
| Number of farms with $\geq 1000$ pigs | 24     | 32     | 37     | 35     | 40               |
| Number of pigs in these farms         | 132157 | 169966 | 185801 | 205360 | 300000           |
| - proportion of pigs, %               | 31.3   | 37.7   | 42.6   | 47.6   | 60.0             |
| Number of farms with 100-999 pigs     | 186    | 201    | 232    | 252    | 300              |
| Number of pigs in these farms         | 52250  | 54027  | 56991  | 59454  | 100000           |
| - proportion of pigs, %               | 12.4   | 12.0   | 13.0   | 13.8   | 20.0             |

Source: CSB data and the author's calculations.

Constant concentration processes can be observed also in pig-breeding (table 6):

- constantly increasing the proportion of pigs bred at the larger commercial farms has already reached 50%;
- concentration is continuing and developing also in the small commercial pig-breeding farms (with 100-999 pigs);
- the number of the traditional small pig-breeding farms is decreasing.

**3. Impact of the concentration on the final results of farming**

For further research four groups of farms have been chosen and the analytical calculations displayed in table 7.

Interpretation of the data displayed in table 7 leads to the following conclusions:

- the economically small farming units (<4 ELV) operate on their own property, as the proportion of a rented land constitutes only 17.6%;

■ as the economic size of farms increase the proportion of owned land from the total area of managed lands constantly decrease;

■ examining the productivity levels of cultivated plants and milk cows a distinct correlation with the economic size of farms was discovered, because wheat yield in the large, economically strong farms is for 65 per cent higher than in the smaller farms;

■ a close correlation can be also observed between the farm's economical size and the value of production outcome per hectare of farmland: - in the large farms group it is five times higher than in the group of the smallest farms (4 EVL);

■ In the tiny farms a large fraction of the production outcome (35%) consist of financial aid payments, but as the economic size of the farms increase, the impact of subsidies immediately decreases, which proves a much higher production efficiency in the large and larger farms;

■ The large farms have a much higher work efficiency because the net added value per one farming unit in the large farms is 3.5 times higher than in the tiny farms of the first group;

■ By receiving a relatively bigger financial support the tiny and smaller farms have gained a higher net added value and a higher commercial income per one ELV.

Table 7

**Impact of the economic size of the farm on its farming results  
in 2004 (in all SUDAT farms)**

| Indicators                                          | Economic size of farms, ELV |        |         |         |
|-----------------------------------------------------|-----------------------------|--------|---------|---------|
|                                                     | <4                          | 8-16   | 100-250 | >250    |
| Average economic size                               | 2.5                         | 10.9   | 152.4   | 650.9   |
| Land used(farmland), ha                             | 23.6                        | 72.4   | 802.7   | 1233.8  |
| Proportion of the rented land, %                    | 17.6                        | 37.5   | 65.7    | 66.7    |
| Wheat harvest, t ha <sup>-1</sup>                   | 2.9                         | 2.9    | 4.1     | 4.8     |
| Milk yield per cow, t                               | 3.9                         | 4.6    | 4.9     | 4.7     |
| Production per 1 ha of the used land, Ls            | 212.16                      | 310.37 | 389.32  | 1064.37 |
| Subsidies % versus production                       | 35.0                        | 21.2   | 28.4    | 9.0     |
| Income from the commercial activities per 1 ELV, Ls | 914.0                       | 832.94 | 458.43  | 229.64  |
| Net added value per 1 ELV, Ls                       | 965.0                       | 961.65 | 805.96  | 565.79  |
| Net added value per 1 LDV, Ls                       | 1445                        | 4664   | 5196    | 2057    |
| The farms' net income versus:                       |                             |        |         |         |
| Subsidies                                           | 130.2                       | 137.0  | 99.6    | 145.6   |

Source: CSB data and the author's calculations.

Table 8

**The Structure of SUDAT farm assets in different size farms  
by the end of 2004**

| Assets, % of their total value                | Economical size of farms, ELV |      |        |      |
|-----------------------------------------------|-------------------------------|------|--------|------|
|                                               | < 4                           | 8-16 | 100-25 | >250 |
| Proportion of land                            | 25.6                          | 17.7 | 8.4    | 6.0  |
| Proportion of buildings                       | 18.5                          | 10.1 | 9.2    | 18.8 |
| Proportion of machines and equipment          | 8.9                           | 23.3 | 31.8   | 18.7 |
| All long-term deposits                        | 73.5                          | 64.0 | 58.7   | 56.5 |
| Liabilities % from all assets                 | 3.9                           | 21.3 | 37.6   | 58.3 |
| Proportion of long-term liabilities           | 80.1                          | 70.6 | 6037   | 56.5 |
| Proportion of own capital (%) from the assets | 96.1                          | 78.7 | 62.4   | 41.7 |

Source: the author's calculations from the SUDAT data (by V.Bratka).

The structure of assets differs dramatically depending on the size of a farm:

- in the assets of small farms proportion of the value of the land is bigger;
- proportion of the value of buildings also significantly decreases, except for the group of the largest farms, which contains independent large limited companies with several business sectors and earlier built buildings;
- Completely different is relation of total sum of liabilities to the total sum of all assets: - in the group of large farms it already reaches 58 per cent;
- The structure of liabilities is also changing: in small farms long-term liabilities are abso-

lutely dominant, while the economical size increases the fraction of short-term liabilities increase;

- Proportion of own capital is also closely related to the number of ELV.

#### 4. Efficiency of received subsidies

There are continuous discussions in society regarding uneven distribution of financial support among the regions of Latvia and farms of different sizes.

Such discussions caused a research. Calculations made for the research are displayed in tables 9 and 10.

Table 9

#### Comparative efficiency of subsidies in small commercial farms (8-16 ELV) in Latgale and Zemgale in 2004

| Indicators                                             | Regions |           |           |
|--------------------------------------------------------|---------|-----------|-----------|
|                                                        | Latgale | Zemgale 2 | Zemgale 1 |
| Average size of farms, ELV                             | 11.4    | 9.1       | 10.2      |
| Work force input, LDV                                  | 4.2     | 2.2       | 1.8       |
| Proportion of agricultural work, % of total DLV        | 54.8    | 86.4      | 100.0     |
| Production output per 1 ha of farmland, Ls             | 369.08  | 281.6     | 427.64    |
| Relation of subsidies versus production output, %      | 31.1    | 28.6      | 16.0      |
| Subsidies for production % from total sum of subsidies | 42.9    | 39.7      | 63.2      |

Source: the author's calculations from the SUDAT data (by V.Bratka).

Table 9 contains analytical calculations for the group of small farms and they show that:

- first of all, the work force input in the analysed regions is very different:- in Latgale it is 2.3 times higher than in Zemgale 1 region, which includes the most agricultural districts;

- in Zemgale 1 region commercial large-scale production is more developed, which allows rational use of heavy-duty machines and equipment;

- farmers of Zemgale 1 region have been focusing their efforts to increase work efficiency and decrease the physical labour intensity, replacing it with intellectual resources and the work that has previously been invested in machines and equipment;

- in Latgale small/tiny multi-branched farms dominate, which necessarily employ higher work-intensity;

- subordinate to the first difference is the second one – completely different proportion of agricultural works:- if Zemgale 1 farms are specialized in a certain agricultural sector, then in Latgale half of the work is attributed to other sectors. Also in Zemgale 2 region including Aizkraukle and Jēkabpils districts there is a significant proportion of other sectors involved;

- by no doubt the highest production output per hectare of farmland is produced by the farmers of Zemgale 1 region;

- very important production efficiency indicators are the results achieved by own forces and means and these are quite polarized in the

analyzed regions: proportion of subsidies in Zemgale 1 region is two times smaller than in Latgale and much smaller than in Zemgale 2 region;

■ Proportion of subsidies shifted for production brightly describes the different interests, because in Latgale most of the financial support

goes to social purposes, but in Zemgale 1 – two thirds of subsidies have been invested in development of agricultural production.

Further the efficiency of subsidies in the largest farms has been evaluated and the calculations displayed in table 10.

Table 10

**Comparative efficiency of subsidies in the larger farms with 40-100 ELV of Latgale and Zemgale regions**

| Indicators                                             | Regions |           |           |
|--------------------------------------------------------|---------|-----------|-----------|
|                                                        | Latgale | Zemgale 2 | Zemgale 1 |
| Work force input, LDV                                  | 12.1    | 3.3       | 4.5       |
| ELV per LDV                                            | 4.84    | 16.3      | 14.6      |
| Production output per 1 ha of farmland, Ls             | 188.91  | 160.81    | 433.91    |
| Subsidies per 1 Ls of production output, Ls            | 1.09    | 0.48      | 0.18      |
| Subsidies per 1 ha of farmland, Ls                     | 205.69  | 77.39     | 76.31     |
| Subsidies for production % from total sum of subsidies | 32.1    | 40.0      | 49.6      |
| Net income % from subsidies                            | 78.9    | 97.7      | 168.0     |

Source: the author's calculations from the SUDAT data (by V.Bratka).

As one can see from table 10, in the larger farms the contrasts are different and also bigger:

■ the difference of work-intensity in the level of such farms is almost triple, which shows completely different work efficiency;

■ large farm farmers of the Zemgale 1 region produce 2.3 – 2.4 times more production outcome(in value means) per 1 ha of farmland than in Latgale and Zemgale 2 regions;

■ a striking indicator is the sum of received subsidies calculated per each lat of the value of the production outcome: - the farmers of Zemgale 2 region have received proportionally 2.7 times more, but the farmers of Latgale region – even 6.8 times more state budget resources than the large producers of Jelgava, Bauska and Dobeļe;

■ also if calculated per 1 ha of farmland, the Latgale farmers have been given 2.7 times more resources than Zemgale farmers;

■ Assessing the respective fields of application of the granted subsidies one can see that in Latgale even the large farms invest only one third of the state financing in development of production;

■ Relation of the net income to the granted subsidies also perfectly describes the different interests and priorities in spending the state aid re-

sources: in the districts of Zemgale 1 region income is for 68 per cent higher, but in Latgale – for 21 per cent lower than the subsidies received.

### Closing and the main conclusions

1. Results of the research perfectly show the different interests, capabilities and possibilities of farmers and people living in rural areas in attracting financial support, and the different spheres of spending it in the different regions of Latvia: in the districts of commercial farming and enterprises national subsidies and EUROPEAN UNION financial support is used for production development, while in many other districts and rural municipalities the tax-payer's money is used for daily consumption or for solving of social problems.

2. Development of strong, large-scale commercial agricultural enterprises with a considerably higher production economic efficiency should be most sustainable.

3. In elaboration and adjusting of distribution strategy of the EUROPEAN UNION financial support for agriculture a maximum support should be given to production development, but problems concerning population density should be addressed by the resources of other financial support funds.

4. The rural population strategy should not be connected to maintaining a large number of natural or semi-natural small farms, instead, people working in the 70 towns of Latvia should be encouraged to move with their families to live in rural areas. Opening and development of new enterprises in other sectors in countryside should also be promoted.

5. The research tasks defined at the beginning of the paper have been accomplished, objectives of the research achieved and the hypothesis proved.

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## The Role of Agriculture in Rural and Urban Areas of a Region with Widespread Industrialisation

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### Abstract

The paper proposes the methodology aimed at classifying a region into different areas in order to better model rural development policies and to highlight the specific multifunctional roles played by agriculture in areas characterized by different levels of rurality. In particular, by examining a case study, the paper shows the need to adapt international methodologies to the specific socio-economic structure of a region, in order to better target policy actions. The case study refers to Veneto, an Italian region well known for its diffused-industrialization model based on SMEs. An OECD-modified area classification is proposed and is statistically and GIS-comparatively tested. The suggested area classification of Veneto should include: a) the *rural area* where agriculture plays a limited role in producing marketable goods but an important one in supplying environmental and recreational services and internalising some of them into the market; b) the *rural-urban area* where market-oriented agriculture is noteworthy and responds to important social needs such as low housing cost, environmentally friendly practices, the supply of high quality products and a balanced link between agriculture and the low-medium scale manufacturing sector; c) the *urban area* where agriculture is marginal as far as supplying food is concerned in food supply but can play an important role in providing environmental, recreational and social services to its residents. Finally, the comparison of our areas with other, more general, classifications show that, in some cases, anchoring policy decisions on a general definition of rural areas could result in only marginal areas being identified as rural.

**Key words:** rural areas, regional rural development.

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### Introduction

Knowledge of the main economic, social and environmental factors of an area is necessary when establishing successful local development policies. This also takes into account the specific and particularly sensitive aspects on which it is necessary to intervene in order to stimulate endogenous development processes (OECD, 2003). The work carried out concentrates on the concept of 'rurality' and proposes the methodology aimed at classifying a region into homogeneous areas when targeting rural development actions, as set out in the *Regulation on Rural Development Support through the European Agricultural Fund for Rural Development for the next programming pe-*

*riod (2007-2013)*<sup>2</sup>. There is no standard definition of 'rural' as far as policies, research or planning are concerned. Definitions use different criteria, levels of analysis and methodologies and have different uses and objectives which are strictly related to the economic and social policies for which they have been designed. On the other hand, no classification system is fully able to meet the wide range of policy needs and to capture the structural, socio-economic and increasing environmental complexity of patterns within a region (Gallego, 2001). The paper proposes an OECD-modified classification methodology to classify a region into rural and urban areas. The OECD-based approach is in line with the preliminary documents of the EU Regulations on rural

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<sup>1</sup> Authors thank Alessandra La Notte (University of Padova) and Sarah Vanin (University of Venezia) for their help in data processing.

<sup>2</sup> The classification does not take into account the positive or negative environmental factors characterizing a region. The environmental-based zoning could overlap the mapping presented here.

development support (Commission Staff, 2004 and 2005). In particular, our approach: a) identifies more homogeneous areas than that of the OECD, by classifying the communes within their provinces and by altitude<sup>3</sup>; b) adapts the OECD classification system into rural and urban areas to the specific growth model which characterises the case study (the Veneto Region); c) refers to the commune as the minimal area unit during the collecting-and-processing-data phase, in order to produce the socio-economic indicators required by the ex-ante, interim and ex-post evaluation of the 2007-2013 regional rural development program, which is co-financed by the EU.

**Methodological approach.** There are various methodological approaches proposed by the existing literature; among them, we have to mention: a) *OECD* (OECD, 1994): a rural area is defined on the percentage of the population which lives in rural communes, i.e. communes with fewer than 150 inhabitants per km<sup>2</sup> (with the exception of Japan where the OECD applies a threshold of 500 inhabitants per km<sup>2</sup> <sup>4</sup>); b) *DG-Agri based on CORINE Land Cover data* (DG AGRI, 2004): using GIS cartography, the percentage of land area occupied, at a communal level, by artificial settlements is estimated together with that classified as 'rural' (agricultural, forest and natural areas) <sup>5</sup>. Communes where 90% or more of the land use is 'rural', are classified as 'rural communes'. The literature also suggests different thresholds, ranging from 70% to 90%; c) *INSOR*<sup>6</sup> (INSOR, 1994) classifies a commune as rural when the percentage of green areas exceeds 50% of the total area and the density of the population is equal to or less than 300 inhabitants per km<sup>2</sup>. Mountain communes can be classified as 'rural' by simply taking into account the population density; d) *ISTAT*<sup>7</sup> distinguish rural from urban communes on the

basis of different growth-level indicators. Although ISTAT classification aims to identify different local employment systems (ISTAT, 1997) it, however, reveals areas of interaction between urban and rural areas as far as the supply and demand of jobs is concerned; e) *EUROSTAT*, like OECD methodology, it is based on the population density of a given area; f) *Council Regulation (EC) No 1260/99 laying down general provisions on Structural Funds (Article 4)* considers rural areas to be those which, based on NUTS 3, comply with the following criteria: (i) either a population density of less than 100 inhabitants per km<sup>2</sup> (rural index) or a percentage share of agricultural employment in total employment which is equal to, or twice the Community average...; (ii) either an average unemployment rate over the last three years above the Community average or a decline in population (underdeveloped or decline index); g) *Countryside Agency, UK*, (ODPM, 2001 and 2004) defines rural areas as settlements with less than 10,000 inhabitants. It is necessary to point out that other countries make similar evaluations but using different population thresholds.

### The 'Veneto model'

Veneto is one of the most densely populated regions in Italy with 4.5 million inhabitants and a population density of 247.7 per km<sup>2</sup> as against 383.4 in Lombardy and 181.8 in Emilia-Romagna<sup>8</sup> (Eurostat, 2001). Unlike what has happened in other developed neighbouring regions, no town in Veneto can be classified as having exceptionally more inhabitants than the others nor they are characterised by a particular socio-economic role<sup>9</sup>. Demographic migration reveals the movement away from mountain areas and from Veneto's centre-south, but contemporarily reveals a shift away

<sup>3</sup> The OECD approach is based only on provincial area classification of communes.

<sup>4</sup> The mapping out of the EU carried out by the Commission on a NUTS 3 scale, identifies the whole of the Veneto Region as being a predominantly urban area, with the exclusion of Belluno which is predominantly rural.

<sup>5</sup> These percentages exclude water surfaces.

<sup>6</sup> Italian National Institute for Rural Sociology.

<sup>7</sup> Italian National Statistical Office.

<sup>8</sup> EU-15 117, EU-25 114.2 and finally, EU-27 112 (European Commission, 2004)

<sup>9</sup> In Lombardy, which for many aspects is dissimilar to Veneto, 41% of the population is concentrated in the province of Milan alone, 12% in the province of Brescia and 11% in that of Bergamo. The remaining 36% is spread over the other provinces. In Veneto, the province of Padua holds a pseudo first place for population (18.8% of the regional total), followed by Verona (18.3%), Treviso, Vicenza and Venice (17.8, 17.7 e 17.6%). Lagging behind are Rovigo (5.2%) and Belluno (4.5%). 38.6% of the population live in medium sized communes (10-50 thousand inhabitants), 21.9% in those with between 5 and 10 thousand inhabitants and 17.4% in those with fewer than 5 thousand.

from more densely populated communes of the central provinces towards areas with fewer inhabitants, thus adding to the growth phenomenon of small settlement areas. The diffused settlement system (and diffused towns) characterise the region. Furthermore, the region presents other particular features such as the fact that it stretches from the Alps to the sea incorporating vast flood plains and important hill ranges, all of which highlight the characteristics which distinguish it from the other regions.

It is considered to be a principal driving force of Italian industry and has deep seated agricultural and industrial traditions. If we compare its GDP (Eurostat, 2001), with that of the EU-15 (taken as equal to 100) the result is 115.8 (with the Italian average of 100.1). Veneto's GDP is by 27.1% higher than the EU-25 average level (where the Italian average is 109.9). The employment share per economic sector shows the prevalently industrial nature of the region: agriculture employs 4% of the active inhabitants, the manufacturing sector 40.2% and the remaining 55.7% work in the services sector<sup>10</sup>. Veneto conserves the basic characteristics of its mainly agricultural economy of the 1960s (Detragiache, 1975); there are numerous, scattered settlements (communes with less than 10 thousand inhabitants represent 81.1% of the total communes of the region and 59.9% of the regional population<sup>11</sup>). This depends on the fact that the industrialisation process in Veneto was founded mainly on a myriad of small-medium sized businesses located in the rural hinterland, with industrial estates springing up only where heavy industry was established (Marghera) (Bonomi and Rullani, 2005). A close bond has been established between agriculture and industry, encouraged by the culture of the population where part-time farming income integrates income and acts as a bolster in times of economic crisis. The economic growth has not triggered off mass depopulation of the rural areas because of the large number of SMEs scattered all over the region. These local businesses lead to significant time-

saving; they do not require the major intervention of public transport and services and social conflict is limited. In this context it is obvious that standard descriptors of rurality are inadequate and often inappropriate (OECD, Eurostat)<sup>12</sup>.

### Defining rural and urban areas for the purpose of targeting rural policies

The OECD-based classification of Veneto region into predominantly rural, significantly rural and predominantly urban areas, based on altitude at the provincial level gives unusable results for rural policy decision-making. The *predominantly urban* area includes the majority of Veneto region: 64.8% of the communes, 82.7% of the total population, 56% of the total area, 70% of the utilized agricultural area (UAA) and 84% of the cattle livestock. In antithesis to this: a) only 13.1% of the population live in the *rural area* (compared with 56.3% at the EU-25 level<sup>13</sup>); b) the rural area covers 46.9% of the total regional area (in contrast with 91.9% at the EU-15 level); c) it incorporates 35.6% of the UAA and 65.5% of forests (compared with 46% at Italian level and 40% at the EU-15) (Gallego, 2001). 70-80% of the gross regional agricultural production comes from areas that, according to the OECD approach, cannot be classified as rural. On the other hand, rural areas account for only: 20% of the arable crop farms (17% of the total UAA of the area is invested in these crops), 20% of the farms cultivating permanent crops (26% of the total UAA of the area), 21% of poultry holdings (23% percent of the regional number of heads), 27% of pig farms (32% of the regional swine population) and 20% of cattle and dairy farms (25% of the regional cattle population).

Consequently according to the OECD approach, an extremely limited percentage of the region's farms and agricultural production are present in rural areas. We must, therefore, distinguish areas which can truly be considered to be urban (*urban areas*), with only marginal agricul-

<sup>10</sup> On a European scale these values within the EU-15 are 4%, 26.2%, 67.7%, and in EU-25 are 5.4%, 28.8% e 65.8%.

<sup>11</sup> National limit for qualifying as a rural commune (OECD, 1994).

<sup>12</sup> The indicator which best explains the phenomenon of the distribution of the population would appear to be based on 400 inhabitants per km<sup>2</sup>, a potential cut off point.

<sup>13</sup> European Commission *Proposal for a Council Regulation in support for rural development by EARDF*, COM (2004)490 final, Explanatory Memorandum.

tural activity and a large number of services available, from those that have vital agricultural, manufacturing and services sectors and widespread urban settlements (*rural-urban areas*), according to the specific Veneto Growth model.

The proposed classification into homogeneous areas identifies a new three-way partition of the region. It is based on population density, as a synthetic indicator of the attractiveness of the area in terms of its present economic, social, and in some ways, environmental features and their future trends. The proposal is statistically validated (discriminant analysis) and compared with other classifications resulting from differing methodologies<sup>14</sup>. It is also analysed by comparing the mean value (observed in the areas) of different socio-economic indicators, which are traditionally present in rural development investigations<sup>15</sup>. The proposal has the advantage of identifying homogeneous areas, which are territorially well defined and visible using GIS software, and also shows the peculiarities of the region's areas, resulting from its growth model. It establishes itself as an adaptation of the methodology put forward at the EU level on the base of the subsidiary principle<sup>16</sup>; finally, it can also be included into the rural area of Veneto land and population shares which are again comparable with the EU averages. Starting from the OECD approach, the proposal aims to: a) identify a criterion which allows the areas defined as *predominantly urban* to be split into two sub-areas, one correctly defined as *urban* and the other as *rural-urban*; b) regroup the remaining two OECD areas (*predominantly rural* and *significantly rural*), if they prove, as they actually do, to be sufficiently similar from a socio-economic and structural point of view.

As far as the first point is concerned, various simulations were carried out by applying different population density thresholds and on the population as a whole, which is another frequently used

indicator in the existing literature (ODPM, 2004). The population density indicator adapted more easily to the predefined objectives than that based on the population as a whole, given that the partition of the region would have been fragmented and patchy. The most appropriate density threshold - given the distribution by different density types of the 376 communes in Veneto that fall within *predominantly urban* OECD areas - is that of 400 inhabitants per km<sup>2</sup>.

About 30% of the communes within the area examined are appropriately defined as urban. The population resident in areas with a density lower than or equal to 400 represents about 50%, local manufacturing units represent 56.1% and the service sector represents 43%<sup>17</sup>. It must also be noted that by applying this density threshold to Veneto region we find that both the population and the land grouping is similar to that of the European Commission<sup>18</sup>.

Figure 1 shows the proposed classification for interventions on rural development for the period 2007-2013. It brings together the two OECD classifications *predominantly rural* and *significantly rural*, as they are very similar, and separates the traditional urban area into *rural-urban* and *urban areas*.

### The goodness of fit

The stratification of the Veneto region into the three proposed areas has been statistically validated by means of discriminant analysis (Mardia *et al.*, 1982). As we know, discriminant analysis is useful when predicting adherence to a group (one of the three proposed areas) of a specific case (commune) based on the observed characteristics of that case. Having pre-defined a set of groups, discriminant functions are estimated from data for which group membership is known. The functions are linear combinations of predictor variables that provide the best

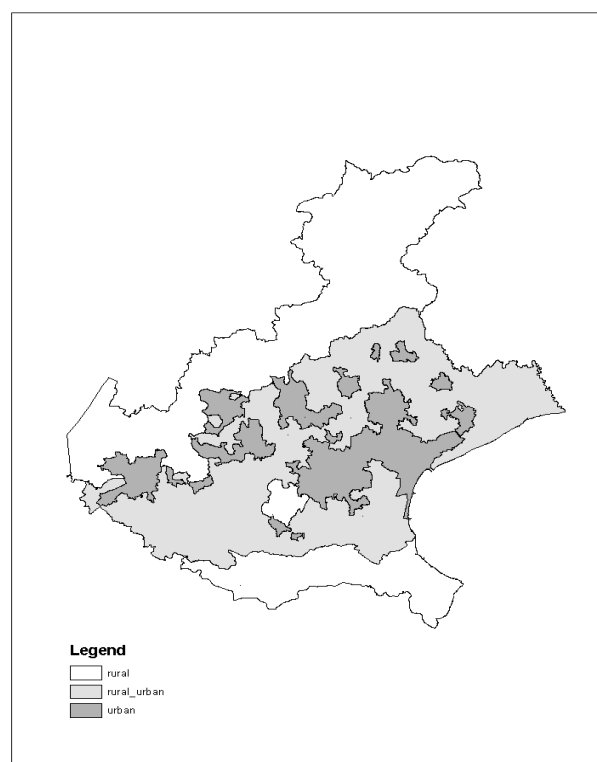
<sup>14</sup> It is necessary to point out that the simulation of alternative criteria and methodologies, often resulted in the definition of far more circumscribed rural areas, which are both fragmented within the region and difficult to interpret.

<sup>15</sup> Some of the indicators examined are those identified as key factors in delimiting rural areas by other methodologies. The statistically significant differences of these indicator values within the areas seem, in themselves, to be an ex-post argument in favour of the proposal.

<sup>16</sup> Art. 7 of Reg. 1698/2005.

<sup>17</sup> The land area in question is 83.4% and 83.6% as regards the UAA. The residents have a much bigger per capita total area (0.0116 km<sup>2</sup> against the 0.0017 of residents in areas with a population density above 400). The UAA per inhabitant is also high (0.41 hectares against 0.09).

<sup>18</sup> Referring to the EU-25, compare European Commission, Explanatory Memorandum, 2004.



Source: Our analysis based on SiSTAR data.

Fig. 1 Veneto Region classification into rural, rural-urban and urban areas

discrimination between the groups. Discriminant analysis has been preferred here, as an alternative to other exploratory statistical methods (e.g. cluster analysis) aimed at revealing natural grouping within data. In fact, the groups have been defined by adapting OECD methodology to the particular case of Veneto region. The following variables have

been taken into account: a) total area per 100 inhabitants of a commune (SUPAB, in km<sup>2</sup>); b) utilized agricultural area per 100 inhabitants (UAAAB in hectares); c) utilized agricultural area over total area ratio.

The statistics of the two estimated discriminant functions are quite good (Table 1 and Table 2).

Table 1

### Discriminant functions statistics

| Function | % of explained variance | Canonical correlation | Wilks' Lambda | Sign. |
|----------|-------------------------|-----------------------|---------------|-------|
| 1        | 87.9                    | 0.618                 | 0.570         | **    |
| 2        | 12.1                    | 0.279                 | 0.922         | **    |

\*\* Significant at the alpha=1% level

Table 2

### Percentage of communes correctly and incorrectly assigned to each area based on discriminant functions

| Original area | Predicted |             |       |       |
|---------------|-----------|-------------|-------|-------|
|               | Rural     | Rural-urban | Urban | Total |
| Rural         | 70.1      | 22.5        | 7.4   | 100.0 |
| Rural-urban   | 13.5      | 67.4        | 19.1  | 100.0 |
| Urban         | 4.6       | 9.2         | 86.2  | 100.0 |

On the basis of the discriminant functions, the total percentage of communes correctly assigned to an area is 71.9% and the cases of misclassification are generally limited to contiguous areas. In evaluating these results, the following has to be taken into account: a)

OECD methodology starts from a commune-based definition of rural but, subsequently, moves to a larger area-based classification of rural places; b) the rural-urban dimension usually moves over a continuous or quasi-continuous line and is not a categorical variable.

Table 3

**Standardized coefficients of the discriminant functions**

|        | Function 1 | Function 2 |
|--------|------------|------------|
| UAAAB  | -0.782     | 0.604      |
| SUPAB  | -0.102     | 0.216      |
| UAASUP | 1.017      | 0.511      |

Examining the standardized coefficients of the estimated functions (Table 3) it can be observed that the first function mainly describes the land use – where the most relevant factor is ratio between utilized agricultural area (UUA) and the total area –

while the latter expresses the pressure of population on the land. In conclusion, the appreciable discriminating power of these factors, which is extremely important when distinguishing rural from urban, confirms the proposed stratification of Veneto region.

Table 4

**Percentages of communes, population and total area of Veneto in each area**

| Areas               | % communes | % population | % Total area |
|---------------------|------------|--------------|--------------|
| Predominantly rural | 14.6       | 5.4          | 23.2         |
| Significantly rural | 20.7       | 11.9         | 20.8         |
| Rural               | 35.3       | 17.3         | 44.0         |
| Rural-urban         | 46.0       | 33.2         | 39.4         |
| Urban               | 18.8       | 49.5         | 16.6         |
| Total               | 100.0      | 100.0        | 100.0        |

Source: Our analysis based on SiSTAR data.

Table 5

**Mean total area and utilised agricultural area (UAA) per 100 inhabitants (hectares) and percentage of UAA over total area**

| Areas               | Total area (**) | UAA (**) | UAA/ Total area (**) |
|---------------------|-----------------|----------|----------------------|
| Predominantly rural | 290.1           | 47.7     | 21.0                 |
| Significantly rural | 123.7           | 46.2     | 48.4                 |
| Rural               | 192.7           | 46.8     | 37.1                 |
| Rural-urban         | 57.0            | 37.0     | 65.4                 |
| Urban               | 17.1            | 9.5      | 53.9                 |
| Total               | 97.4            | 35.3     | 53.3                 |

\*\* Means significantly different at the alpha=1% level.

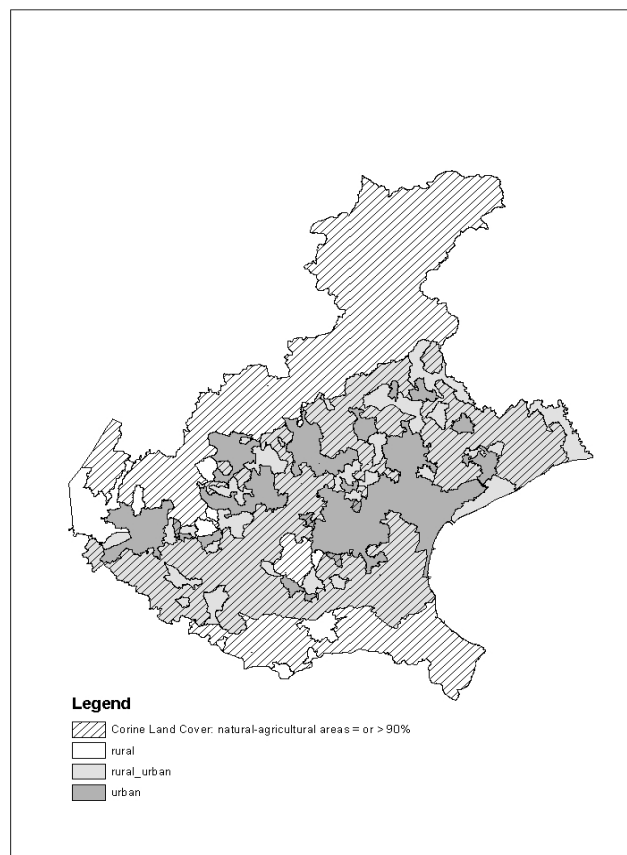
Source: Our analysis based on SiSTAR data.

Tables 4 and 5 show that the three areas differ significantly both in terms of total and utilized agricultural area per 100 inhabitants and UAA/

total area ratio. On the other hand, the OECD's *predominantly rural area* and the *significantly rural* tend to be more similar to each other.

The proposed stratification has been empirically compared with the classification based on DG-Agri methodology, using CORINE Land Cover 2000 data at NUTS 1 level. The dashed areas of Figure 2 show the *rural area* according to the DG-Agri methods (over 90% of total land, excluding water, covered by agricultural, forest, and natural areas and wetlands). The comparison between the two classifications highlights that the DG-Agri rural area is quite similar to the *rural* and *rural-urban* put for-

ward in our proposal. This evidence: a) implicitly confirms our hypothesis of a greater similarity of *rural-urban* to 'rural' zones rather than to 'urban' ones, as *stricto-sensu*- OECD methodology suggested for Veneto region. In other words, separating the OECD-urban area into two sub-areas seems reasonable; and b) shows that the *predominantly rural* areas and *significantly rural* ones of the OECD approach are basically incorporated in the DG-Agri proposal rural area.



Source: Our analysis based on SiSTAR and CORINE-Land Cover 2000 data.

**Fig. 2 Comparison between the proposed stratification of Veneto region and the DG-Agri one based on CORINE Land Cover data**

### The Classified Areas

In the following section the main socio-demographic, economic and agricultural factors characterizing the three areas are analysed in order to highlight their rural-policy-relevant differences.

#### Socio-economic characteristics

By analysing the population in the three areas, we find that 35.3% of the communes, 17% of total population and over 44% of the total regional

area fall within the rural area. 46% of the communes fall within the *rural-urban* area. The latter appears to be the more evenly balanced in terms of population and total land range. Nearly 50% of the population live in urban communes, which represent just over 19% of the regional total. The total area per inhabitant varies noticeably in the three groupings; the UAA on the other hand tends to reveal less divergence between rural and urban-rural areas.

Table 6

**Communes, population and total area (% of Veneto in each area), Mean total area and UAA (hectares) per 100 inhabitants in the different areas**

| Areas       | Communes | Population | Total area | Mean Total area (**) | Mean UAA (**) | Mean ratio UAA / Total area (**) |
|-------------|----------|------------|------------|----------------------|---------------|----------------------------------|
| Rural       | 35.3     | 17.3       | 44.0       | 192.7                | 46.8          | 37.1                             |
| Rural-urban | 46.0     | 33.2       | 39.4       | 57.0                 | 37.0          | 65.4                             |
| Urban       | 18.8     | 49.5       | 16.6       | 17.1                 | 9.5           | 53.9                             |
| Total       | 100.0    | 100.0      | 100.0      | 97.4                 | 35.3          | 53.3                             |

\*\* Means significantly different at the alpha=99% level.

Source: Our analysis based on ISTAT information and SiSTAR database.

Table 7

**Ageing index, replacement rate, age-dependency ratio, unemployment and mobility rate**

| Areas       | Ageing index (**) | Replacement rate (**) | Age-dependency (**) | Unemployment rate (**) | Mobility rate (**) |
|-------------|-------------------|-----------------------|---------------------|------------------------|--------------------|
| Rural       | 171.4             | 134.1                 | 51.6                | 4.5                    | 48.2               |
| Rural-urban | 122.3             | 111.6                 | 46.4                | 3.5                    | 52.6               |
| Urban       | 110.3             | 128.9                 | 43.2                | 3.6                    | 54.6               |
| Total       | 137.4             | 122.8                 | 47.6                | 3.9                    | 51.5               |

\*\* Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR data (2001).

Table 8

**Mean number of holdings per 100 inhabitants in each area: agricultural, manufacturing and service sectors**

| Areas       | Agricultural (**) | Manufacturing (**) | Service (**) | Total (**) |
|-------------|-------------------|--------------------|--------------|------------|
| Rural       | 6.2               | 2.9                | 5.7          | 14.8       |
| Rural-urban | 8.1               | 3.4                | 5.1          | 16.6       |
| Urban       | 3.9               | 3.1                | 6.6          | 13.7       |
| Total       | 6.6               | 3.2                | 5.6          | 15.4       |

\*\* Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR data.

50% of the people living in the region commutes every day from their residence settlement to work. This applies to urban communes which are particularly affected by the mobility phenomenon.

Communes which are spread over a wide territory but have low population density, such as mountain areas, are classified under *rural area*. Both the amount of land available to the popula-

tion and the UAA are high. The ageing index<sup>19</sup> and the demographic replacement rate<sup>20</sup> highlight difficult conditions and a greater concentration of the elderly in this area. The rural area is characterised by the presence of a higher percentage of farms per 100 inhabitants as opposed to other sectors of the economy. Manufacturing and services sectors are more or less homogeneously distributed throughout the region. In relation to

<sup>19</sup> The relationship between those aged 65 or over and those up to the age of 14, times 100. A low index value indicates a high birth rate and a lower percentage of the elderly.

<sup>20</sup> Demographic replacement rate is the ratio between the number of people aged over 65 years and the number of people aged 15-64, i.e. people exiting the working-age population and people entering it.

the population, however, the services sector prevails over that of manufacturing. This area also includes important natural heritage (mountains, coastline and national parks) and many public services provided by them are internalized into the market by activities linked to tourism. Here too, agriculture is relatively diffuse, but a lot of economically marginal farms are located in rural area.

In the *rural-urban area*, the per capita total area is about two thirds less than that available to the inhabitants of rural areas. The situation tends to improve as far as the UAA is concerned, with values above the regional average and not greatly different from that in the rural areas. The replacement rate is more favourable than in the other zones; as far as the ageing index and the replacement rate are concerned, the figures are always below the regional average, but are closer to those of the urban areas.

The highest percentage of the region's farms is located in the rural-urban area (even as far as the number of farms per 100 inhabitants ratio is concerned), the other sectors are also significantly represented. The manufacturing sector is quite large while, as only to be expected, the services sector has a lower percentage value when compared to the region as a whole. Where the evaluation takes into consideration the population (we must remember that around 50% is located in this area) the average number of units per inhabitant is also lower than that of the urban areas.

In the *urban area* the land per inhabitant is very low, both in terms of total area and UAA. The demographic indexes, particularly those referring to age and age dependency (the discrepancy between the potential working population and the non-working population, namely children and the elderly) appear to be more encouraging than in the other areas. The demographic replacement rate, on the contrary, tends to be higher than the regional average, probably due to the smaller incidence of people in the 15 to 19 year old age class. Inevitably, 57% of the services units and 44% of the manufacturing units are concentrated here. The ratio between local units and the population favours the services sector; the industrial sector is lower here than in rural-urban areas, which confirms the Veneto industrialization model which has spread across the region. Farms are particularly penalized.

### **The farm structure**

Tables 9 to 12 summarise the types of agriculture carried out in the various areas, which in this case also highlight significant statistical differences in many of the variables taken into account. The *rural area* has 21% of the regional farms and 30% of the regional UAA.

The average size of the farms is higher than in the other areas. Farming is mixed, with permanent crops being the principle activity (26% of the regional total) followed by arable crops at 15%. 30% of the UAA is invested in high quality production (organic-farming products, high quality labelled food under a public or private certification system and eco-labelled products). Low-input crops are particularly widespread (36% of the regional total) and, above all, certified products (42%). The number of cattle in the area accounts for 16% of the regional total: the concentration of heads is average (0.6 heads per hectare), roughly half that of the regional average. The area also includes 96.5% of the region's parks (15.8% of the area's total land) together with 72.1% of the region's Natura 2000 sites which is equal to 35.8% of the zone's total area. Market-oriented farm activities are complemented by supplying environmental-recreational services, thanks to the positive externalities provided by the area. The internalization into the market of public, however, is only partial given that only 33% of the region's agrotourism are located here.

The *rural-urban area*, which the OECD approach classifies as urban, is responsible for 50% of the total vegetable and animal production of the region and also stands out for the quantity of high quality products. It has 54% of the region's UAA and 52% of the farms, but they tend to be mainly low-medium size. As regards production, the area has 51% of the arable crops, 58% of the permanent crops and 57% of the region's quality products, together with 64% of the organic farming and 65% of the region's total cattle livestock. As well as having a strong agricultural sector, the rural-urban area's UAA is about two-thirds of the area's total land. This is by far the highest value in all three of the areas considered and confirms the importance of agriculture in producing and promoting positive environmental-landscape services. This area is submitted to strong anthropic pressure resulting from the typical, widespread urban and productive models which, conversely, have very little parkland (2.5% of the regional

total) or protected areas (20.7% of the region's Natura 2000 sites). This area, however, has a sizeable number of recreational activities provided by the farms: nearly half of the region's agrotourism is concentrated in this area.

*Urban Area:* this area has 27% of the region's farms and 16% of the UAA together with a high concentration of micro-holdings<sup>21</sup>. The role played by agriculture in terms of land use is of a certain importance, in fact, 54% of the total area is farmed. However, it has limited importance as far as market production is concerned compared to the other areas, with only 13% of the region's high quality crops, 17% of the permanent crops and a third of the arable crops. The share of regional cattle breeding farms is in line with that in the mountain areas, even if the average concentration of the number of cattle is comparable to that of the rural-urban area. From a structural and economic viewpoint

the farms here either qualify for dimensional restructuring (regrouping of land and property) or conversion towards the supply of public and/or private services to residents living in the area, or in more densely populated urban centres. Some farm recreational activities are already present in the area: more than one third of the regional farms' recreational activities, other than agrotourism, are to be found here. As only to be expected, the number of parks and protected areas is limited.

The three areas are statistically significantly different even as far as agricultural employment is concerned (Table 13).

The *rural area* has a relatively low concentration of agricultural workers, whether they are family members or employees, equal to 22% of the regional total and the lowest work-land ratio (63 work days per year per hectare). The structural equilibrium between the main production factors

Table 9

**Percentage of holdings, UAA, arable crops area, permanent crops area and grazing livestock of Veneto in each area; mean UAA per holding (hectares)**

| Areas       | Holdings | UAA   | Arable crops area | Permanent crops area | Cattle | Mean UAA per holding (**) |
|-------------|----------|-------|-------------------|----------------------|--------|---------------------------|
| Rural       | 20.7     | 30.0  | 15.3              | 25.6                 | 16.4   | 12.2                      |
| Rural-urban | 52.1     | 53.7  | 51.3              | 57.6                 | 65.2   | 5.3                       |
| Urban       | 27.2     | 16.4  | 33.4              | 16.9                 | 18.5   | 2.8                       |
| Total       | 100.0    | 100.0 | 100.0             | 100.0                | 100.0  | 7.3                       |

\*\* Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR and 2000 Agricultural Census data.

Table 10

**Percentage of high quality crops of Veneto in each area**

| Areas       | High quality crops ^ (**) | Certified-low-input crops (*) | Organic crops | Quality-labelled crops (**) |
|-------------|---------------------------|-------------------------------|---------------|-----------------------------|
| Rural       | 30.2                      | 36.4                          | 24.7          | 42.2                        |
| Rural-urban | 56.6                      | 52.9                          | 63.9          | 47.8                        |
| Urban       | 13.2                      | 10.6                          | 11.4          | 10.1                        |
| Total       | 100.0                     | 100.0                         | 100.0         | 100.0                       |

<sup>^</sup>According to Agricultural Census classification High quality crops include: certified-low-input crops, organic crops and quality-labelled crops under a public or private regulation.

\* Means significantly different at the alpha=5% level.

\*\* Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR and 2000 Agricultural Census data.

<sup>21</sup> 50% of the businesses have less than 2.4 hectares with an average UAA per enterprise of 2.8 hectares.

<sup>22</sup> An Annual Work Unit (AWU) is a conventional full-time worker (working 1800 hours per year). A part-time worker is converted into a pro rata AWU.

results in lower hidden underemployment in the agricultural sector (the ratio of standard full-time employees (AWU)<sup>22</sup> to actual workers averages at around 21.6%). The *rural-urban area* has the highest number of people employed in agriculture in the region, for a total of 52%. The ratio between the employment and the land is roughly 70 working days a year due to more intensive production systems which aim at more, higher quality products. The AWU/worker ratio is 18.4%. The

*urban area* represents 26% of the agricultural workers, a high result if we compare it with the area's regional share of UAA. This figure reflects the structural weakness of the farms in the area. This inefficiency is responsible for the high average workload per hectare (85 working days per hectare per year). Underemployment in this area is notably higher than that in the other areas (15.8%) due to the fact that the farms are small and mainly grow extensive crops.

Table 11

**Percentage of agrotourism and other farm recreational activities in Veneto per area**

| Areas       | Agrotourism | Other recreational activities |
|-------------|-------------|-------------------------------|
| Rural       | 33.5        | 33.1                          |
| Rural-urban | 47.6        | 35.9                          |
| Urban       | 18.9        | 31.0                          |
| Total       | 100.0       | 100.0                         |

Source: Our analysis based on SiSTAR and 2000 Agricultural Census data.

Table 12

**Percentage of Parks and Natura 2000 areas in Veneto per area**

| Areas       | Parks | Natura 2000 areas | Total parks and Natura 2000 areas <sup>^</sup> | Total forest and natural areas, wetland and salt areas <sup>^^</sup> |
|-------------|-------|-------------------|------------------------------------------------|----------------------------------------------------------------------|
| Rural       | 96.5  | 72.1              | 74.8                                           | 64.3                                                                 |
| Rural-urban | 2.5   | 20.7              | 18.8                                           | 25.4                                                                 |
| Urban       | 1.0   | 7.1               | 6.5                                            | 10.3                                                                 |
| Total       | 100.0 | 100.0             | 100.0                                          | 100.0                                                                |

<sup>^</sup> Total, excluding double counting of the same area.

<sup>^^</sup> Agricultural area not included.

Source: Our analysis based on CORINE Land Cover 2000 data.

Table 13

**Percentage of region's total number of workers in agricultural holdings in each area, mean number of working days per hectare of UAA and total annual work units (AWU) over total workers ratio**

| Areas       | % Agricultural labour <sup>^</sup> | Number of working days per hectare of UAA <sup>(**)</sup> | AWU/total workers <sup>(**)</sup> |
|-------------|------------------------------------|-----------------------------------------------------------|-----------------------------------|
| Rural       | 22.4                               | 63.5                                                      | 21.6                              |
| Rural-urban | 51.9                               | 69.3                                                      | 18.4                              |
| Urban       | 25.7                               | 85.9                                                      | 15.8                              |
| Total       | 100.0                              | 70.4                                                      | 19.0                              |

<sup>^</sup> family labour, including farmer, and paid workers.

<sup>\*\*</sup> Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR and 2000 Agricultural Census data.

<sup>23</sup> Roughly 17% of agri-business managers have a secondary school or university education though not in agricultural studies, with only 3% who specifically trained in the subject.

Finally, it is important to examine the main characteristics of the holders (Tables 14 and 15). The *rural areas* appear to have the highest number of young farm managers (3.4% are under 30 years of age), where the mean share of part-time holders is basically in line with the regional average, they tend to be more highly educated than holders in the other areas<sup>23</sup>. *Rural-urban area*: here, the characteris-

tics of the ‘average farmer’ fall between the mean values observed in the other two areas both in terms of age (2.3% of the managers are under 30 years of age) and secondary school and university education. As a result the level of education these holders have received tends to be lower. This area also appears to have a significantly higher number of female holders (22.6%) compared with the other two areas.

Table 14

**Mean percentage of holders by age class, sex and part-time farming**

| Areas       | Over 60 years (**) | Under 30 years (**) | Women (**) | Part time |
|-------------|--------------------|---------------------|------------|-----------|
| Rural       | 44.9               | 3.4                 | 21.7       | 23.8      |
| Rural-urban | 48.8               | 2.3                 | 21.1       | 23.5      |
| Urban       | 51.3               | 1.7                 | 22.6       | 24.0      |
| Total       | 47.9               | 2.5                 | 21.6       | 23.7      |

\*\* Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR and 2000 Agricultural Census data.

Table 15

**Mean percentage of holdings by educational level of the holders**

| Areas       | Secondary school: agriculture (**) | University level: degree in agriculture (**) | Secondary school or university: other (**) |
|-------------|------------------------------------|----------------------------------------------|--------------------------------------------|
| Rural-urban | 2.2                                | 0.7                                          | 16.8                                       |
| Urban       | 3.2                                | 0.5                                          | 11.6                                       |
| Total       | 2.4                                | 0.4                                          | 12.2                                       |
| Rural       | 2.7                                | 0.5                                          | 13.5                                       |

\*\* Means significantly different at the alpha=1% level.

Source: Our analysis based on SiSTAR and 2000 Agricultural Census data.

## Concluding remarks

The concept of rural (or urban) can have different definitions, influenced by the policy needs. Our paper aims to propose the methodology able to provide policy-relevant information applicable to the decision-making process for regional Public Authorities. The European Commission pays particular attention to rural development by increasing the measures and the resources available in order to achieve increased competition as regards the environment, rural space and the quality of life in rural areas and also by giving incentives to diversify the economic activities in the rural areas. Despite the fact that macroeconomic indicators highlight the decreasing weight given to agriculture, especially in the more industrialised countries, it continues to play a vitally important multifunctional role if we consider that a large

amount of the total land is invested in agricultural activities. In the case study, the growth model based on a large number of SMEs spread throughout Veneto region highlights how the classification criteria for rural areas, applied at both international and European levels, do not allow the majority of highly productive agricultural areas to be classified as rural. If, according to the EU, multifunctional agriculture plays an important role in rural areas, we cannot exclude from rural policy actions those areas where, agriculture has a significant role in terms of providing goods and public or quasi-public services more than in any other sector. In particular, by comparing our results to those of more general classifications, we have shown that anchoring policy decisions to a wide definition of rurality – which identifies only marginal areas as ‘rural’ – can sometimes lead to inappropriate targeting.

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## Opportunities for the Development of Producer Organisations in Fruit and Vegetable Sector of Lithuania

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### **Abstract**

Small growers dominate in fruit and vegetable sector in Lithuania, they cannot withstand the pressure of market. Co-operation is poor in this sector so the performance of cooperatives cannot significantly influence the market. There is no PO or potentially recognised group of producers in Lithuania, though this situation makes the preconditions for the development of growers co-operation. The paper focuses on the role of PO and patterns of possible fruit and vegetable growers cooperation models. Recommendations are based on functioning of the agricultural cooperatives in Lithuania, which can become a fundamental impulse to create 1-2 vegetables and one or several fruits PO.

**Key words:** fruit and vegetable market, cooperative, producer organisations, recognition, financial support.

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### **Introduction**

Contrary universally accepted the importance of fruit and vegetable sector for the welfare of residents and the priority in agricultural sector, the exceptional attention has to be applied to warrant the progress – to have ability rising internal needs and to reach the export potential, the state of this sector is not good enough yet: the international trade balance is negative, small scale enterprises not able to withstand the pressure of market are governing in the sector.

The situation enforces to bring organized co-operation. The competitiveness among fruit and vegetable growers simplifies the establishment of producer organisations (further PO) and the stabilization of market as the main purposes of the Common Agricultural Policy of the European Union (further the EU). The establishment of PO enables to secure for support from the EU Structural funds. Although the admission of PO according to actual correspondence requirements helps

legislate Lithuanian PO before entering the EU, still there is no any PO in Lithuania.

Producer organisations can be attributed to higher level of co-operation, and cooperative is the relevant legislative type of PO. Following this, the object of research – the cooperatives of fruit and vegetable growers of Lithuania.

**The aim of the research:** to evaluate the development of cooperatives of fruit and vegetable, to define the opportunities for the establishment of PO, to put forward the proposals for the acceleration of PO's establishment.

#### **The corresponding tasks:**

- to make the research of co-operation shifts at fruit and vegetable market;
- to evaluate the impact of co-operation and consolidation of producer groups into PO for the increase of their competitiveness;
- to create the PO models.

#### **Research methods:**

The data from 10 cooperatives in Lithuania according to a special questionnaire were collected

in order to assess the situation of fruit and vegetable cooperatives and their development. The special questionnaire was comprised of general records (address, executives, registration date, etc.) about cooperatives and special questions about cooperatives' business peculiarities (the main and additional activity of cooperative, the number of members and employed staff, long and short term capital, received shaped support from current derivation, the sales and places for sales of fruit, berries, vegetables and mushrooms, the profit of cooperative, net profit, assigned taxes). These data in all cooperatives were collected from the moment of their registration. Moreover, the collection of data was impacted by the interview of experts – the executives of cooperatives (they are the most important persons for progress of such enterprises).

The analysis of the legislative instruments such as national and the EU was made to assess the possibilities for the establishment of PO. The EU member states and especially the experience of Poland was analyzed in the field of fruit and vegetable PO's development (Domagalska-Grządys, 2004; Kurzawicki, 2004). The co-operation shape was evaluated under the analysis of economic literature and legislation acts for regulation fruit and vegetable common market, grouping primary and secondary data, identifying the relations between them and applying the analogue methods, as well as presumable formation of PO models.

## Results of the research

### Common market organisation and its reorganisation trends

During the research it was pointed that seeking to adopt fruit and vegetable growers to common market organisation, Lithuania before entering in the EU already had formulated rules of recognition and financial support for fruit and vegetable PO, unfortunately respecting socio-psychological and organisational-economic causes there are no any recognised PO. Current reorganisation of fruit and vegetable market organisation provides new opportunities to establish PO and financial support appliance. The decentralization of fruit and vegetable market organisation develops preconditions to take count of different countries conditions and markets situation. These preconditions are possible to be applied after preparation of detailed rules by all questions, which are delegated to national competence.

The Regulation No 1432/2003 (Commission..., 2004) has made the most significant changes:

- under the legislation new market tendencies for PO are stimulated to cooperate in bigger units;
- activity of PO subsidiaries is regulated;
- it creates possibilities for the acceptance of non-fruit and vegetable growers to PO.

The following terms are introduced: "producer organisation", "producer group", "transnational producer organisation", and "transnational association of producer organisations".

Producer group is a legal subject, which is granted preliminary recognition, PO is a legal subject, which is granted full recognition.

The transnational PO head office must be established in a Member State where the organisation has significant holdings or a significant number of members and/or achieves an important level of marketed production. There were some cases, when PO crossed the borders of countries; currently this tendency has got full legislative recognition in the EU. According to this it makes new preconditions for Lithuanian growers: the farmer, who is growing fruit, berries, vegetables or mushrooms, can become a member of the PO, which head office is dislocated in France, England or Poland. This raises some certain threats, when active holders of prosperous farms are involved into transnational PO without efforts to be initiators of the majority Lithuanian growers association of national market regulation thus leaving considerable part of growers "overboard".

Growing globalisation tendencies reflect definite legitimization of transnational PO associations and stimulation of their establishment. The practice of transnational PO associations is build on the same principles as activity of transnational PO.

The above mentioned regulation introduces the concept of PO's subsidiaries. The value of marketable production may be calculated at the ex-subsidiary stage providing the producer organisations or their associations at least 90% of the capital. The marketable production of PO subsidiary is included into PO production, calculating the size of financial support from the EU budget.

The Member States may determine whether and on what conditions any individual or legal person who is not a producer may be accepted as a member of PO. The regulation emphasizes that they cannot benefit directly from the measures financed

by the Community. Member States may restrict or prohibit access of these individuals to vote on decisions relating to operational funds. The regulation No 1432/2003 does not strictly define the size of production of PO and producers groups and the criteria of quantity of members under their recognition. The low minimum requirements exist till this time (for the recognition of PO an essential condition is that 5 members are able to supply the production of EUR 100 thousand per year), separate countries define higher requirements. Obviously, that PO cannot be vital in the market with the turnover of EUR 100 thousand, this value should be defined as primary. The established groups of producers and PO have to cooperate and develop. Article 12 of the Regulation establishes the rules for the of POs merger.

The fundamental innovation is that PO can be created for several groups of products, for example, fruit and mushrooms jointly. Earlier the group of producers under full recognition plan could be recognised no earlier than 3 years of practical activity in the market. Such restriction is already cancelled – determinable specification is the criteria of full recognition performance.

The significant role is given to the EU member states. The EU member states are responsible for tentative and PO recognition of producers groups, also for PO associations, the international PO and the associations of international PO.

The result of recognition belongs to the country where a juridical subject is established. The EU member states are absolutely free and responsible for defining the performance conditions regarding membership in PO for physical and juridical subjects, which are not fruit and vegetable growers; the maximum vote share for a PO member is defined (from 20 to 49 percent); the terms under which the supplied production of PO is defined as important indicator for appliance of the EU financial support; the preparation of recognition plans, content and principles of organisation; the exchange rules for performing programmes.

The organisation of fruit and vegetable market will be reorganized in future. The European Commission declared the analysis and report for the simplification of fruit and vegetable common market organisation (Report..., 2004). The discussions about the sector future performance induce the questions, which are currently important to meet the Common Agricultural Policy (CAP) in this sector as essential reform to facilitate to introduce the

principals of CAP in space of new entrants of the EU, to guarantee high quality of production supply, to relate fruit and vegetable market and rural development tasks. The common trend of reformation – more significant maintenance to PO, reducing intervention and broadening the subsidiary principle while managing market.

### **The growing of vegetables**

The soil and climate conditions are favourable for the development of vegetable growing in Lithuania. Long lasting traditions of vegetable growing, adoptive to handiwork sector are fully supplied with workforce. Geographical dislocation, climate and traditions of Lithuania create preconditions for the development of vegetable growing. Therefore vegetable growing is accepted as a priority range of national economy.

The most respectable is open field vegetable growing in Lithuania. In 2004 the area of open field vegetables harvest comprised 1.4 percent of common agricultural plants crop structure, 9.5 percent in common agricultural production structure, and 4.3 percent in the agricultural and food production export. Ten thousand of population are engaged in this sector.

According to the agricultural census in Lithuania (2003), 119 thousand farms were growing plot vegetables (43 percent of all farms), the size of almost all the farms were small (up to 1 hectare). Only 192 farms captured 5 hectares. 99 percent of plot vegetable harvest was grown in farmers and owners farms in 2004. Greenhouses supply the most significant greenhouse crops to the market.

Currently plot vegetables are concentrated in small farms, and greenhouse vegetables – in gross harvesting enterprises of a greenhouse. All types of greenhouses in Lithuania are situated in 665 ha; where 62 ha are operated in winter time. Modern technologies of growing and harvesting are implementing and extending to winter greenhouses. After the implementation of modern technologies, the working efficiency and productivity was increased, and up to 25 percent of energy resources have been saved. Currently harvest from 62 ha of greenhouses exceeds 17 thousand t vegetables of the highest quality. Five years ago the greenstuffs constituted 4 percent, while nowadays the respective figure is 7 percent of all grown greenstuffs. The supply of greenstuffs is still too small as the quantity per person consumed is just

5-6 kg of greenstuffs per year, though according to nutrition requirements the recommended quantity is 13-15 kg/year.

### The market of vegetables

On May 1, 2004 Lithuania entered the European Union Common market, and it changed the situation in internal market – the vegetables flows from the European countries increased. The situation has become worse because of unregulated relations between the vegetable growers and sellers. Trade system requirements are grounded on demand for the supply of high quality and quantity production. Meanwhile the multitude flows of non-standard vegetables are coming from the EU states to Lithuania. Cheaper and non-standard

production restricts the supply of higher quality harvest from local market production to appear. The most important decisions affect the imported vegetables from Poland.

Throughout the last five years the purchase of vegetables has expanded, while a low decline in 2004 was observed, in 2004 only cabbages and carrots were bought more than in 2003 – accordingly 36 and 33 percent (Table 1).

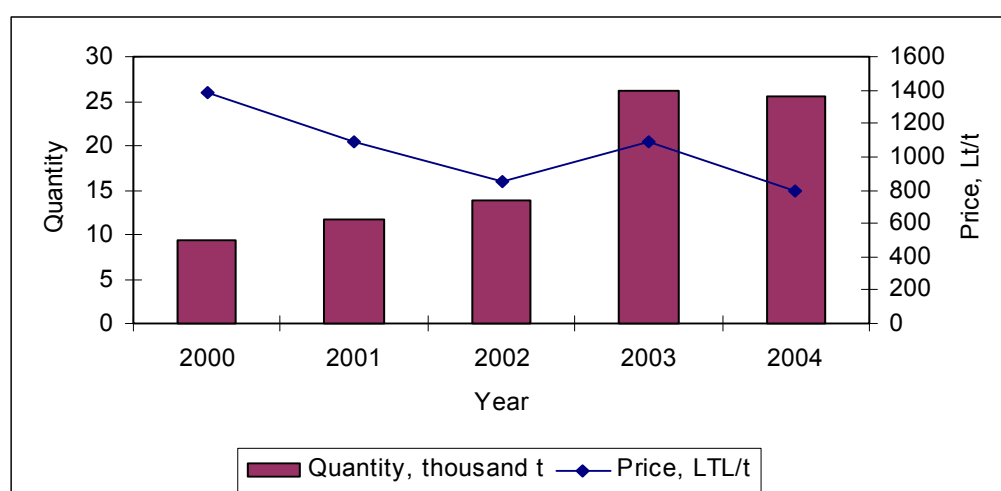
During the period of 2000-2002 the purchasing prices have decreased, in 2003 they were a bit higher than in 2004 when a decline of prices was experienced. In 2004 the average purchasing price of greenstuffs in comparison with 2004 has decreased by 27 percents (Figure 1).

Table 1

### Purchase of vegetables in Lithuania in 2000-2004

| Indicators                                       | Year |      |      |      |      |
|--------------------------------------------------|------|------|------|------|------|
|                                                  | 2000 | 2001 | 2002 | 2003 | 2004 |
| Total vegetables sold, thou. t                   | 22,1 | 22,0 | 24,7 | 26,2 | 25,6 |
| Vegetables sold directly to consumers, thou. t   | 12,8 | 10,2 | 10,8 | -    | -    |
| Vegetables sold to purchase enterprises, thou. t | 903  | 11,8 | 13,9 | 26,2 | 25,6 |
| of which: cabbages                               | 2865 | 3489 | 3361 | 6103 | 8292 |
| onions                                           | 825  | 1091 | 1085 | 2093 | 1627 |
| cucumbers                                        | 1921 | 3062 | 3600 | 4913 | 3794 |
| beetroots                                        | 1050 | 1185 | 2327 | 3244 | 3056 |
| carrots                                          | 1218 | 1278 | 1950 | 3660 | 4884 |
| tomatoes                                         | 1035 | 1297 | 1113 | 2313 | 2131 |

Source: Lietuvos statistikos..., 2005.



Source: Lietuvos statistikos..., 2005.

Fig. 1 Amount of purchased vegetables and the average price in 2000–2004

The negative trade balance of Lithuania limits the purchase of local fruit and vegetables. Vegetable harvest is seasonable and it varies up to 30 percent depending on the year. Since 1997 Lithuania's import has been higher than export. Vegetable import comprised 35 – 50 thousand t. The import of vegetables in 2004 increased to 29 percent, while 50.1 thousand t of vegetables were imported and their value reached LTL 144,0 mln. The average market price of imported vegetables was LTL 2877. The biggest import is from the Netherlands (ca. 65 percent) and Poland (ca. 21 percent). The assortment of vegetables is composed of bulbous vegetables (ca. 40 percent), cabbages (16 percent) and tomatoes (19 percent).

In 2004 the export to other countries was 21,3 thousand t of vegetables or by 55 percent more than in 2003, the majority was exported to Latvia, Russia, and Estonia. The total export value in 2004 reached LTL 125.5 mln.

### Fruit growing

Development of fruit growing is beneficial in Lithuania under favourable climate. This sector is a priority in agricultural performance. The scope of fresh fruit purchase in general structure of agricultural production amounts to 1.2 percent. The production of fruit in 2004 was 3.2 percent in the value of exported Lithuanian agricultural production.

33276 ha area for fruit and berries cultivation was declared in 2004 as industrial orchards and

3732 ha industrial berries plantations. Comparing 2004 with 2003 the area for fruit growing has increased by 33.6 percent. The majority of fruit areas are amateur and gardeners partnership. The area of such activity had composition of 25.1 thousand ha, or 78 percent of all fruit area in 2004. According to the statistical data in 2004 the fruit produced in the industrial space of agricultural enterprises reached 2.6 thousand hectares.

Fruit growing is popular among farmers and agricultural enterprises. 20 large scaled enterprises are performing in local market with 30-400 hectares area of land. They are the main suppliers of dessert fruit and berries. 80-90 percent of industrial apple orchards supply are committed to trade systems. The specialists of high qualification are working in such enterprises with fully-completed technique for maintenance and protection of orchards, gathering harvest, and storage of harvest, cooling systems and refrigerating technology. The majority of orchards have spare plants with planted in seminal stock. The production of such orchards does not completely satisfy the demand of market. The modernisation (reconstruction) of orchards is done to get dwarf orchards.

The industrial fruit growing is developing in two directions in Lithuania – growing dessert fruit and berries for the local market and export to the Eastern and Northern countries, and growing raw berries for recast in Lithuania.

Table 2

### Purchase of selected fruit and berries in 2002–2004

| Products                    | Year        |                 |             |                 |             |                 | Price 2004<br>compared to<br>2003, % |
|-----------------------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|--------------------------------------|
|                             | 2002        |                 | 2003        |                 | 2004        |                 |                                      |
|                             | Quantity, t | Price,<br>LTL/t | Quantity, t | Price,<br>LTL/t | Quantity, t | Price,<br>LTL/t |                                      |
| Fruit and<br>berries, total | 39905       | 140             | 75388       | 136             | 7872        | 345             | 253,7                                |
| of which:<br>cherries       | 15          | 1636            | 3           | 3229            | 4           | 1224            | 37,9                                 |
| plums                       | 4           | 945             | 26          | 392             | 10          | 675             | 172,2                                |
| apples                      | 37033       | 116             | 75042       | 132             | 7439        | 294             | 222,7                                |
| pears                       | 3           | 1235            | 1           | 2409            | 0,7         | 2953            | 122,6                                |
| strawberries                | 9           | 2390            | 8           | 6046            | 89          | 3600            | 59,5                                 |
| raspberries                 | 15          | 3628            | 3           | 4526            | 13          | 3801            | 84,0                                 |
| black currants              | 294         | 1245            | 127         | 1159            | 87          | 690             | 59,5                                 |
| other currants              | 199         | 1138            | 45          | 1623            | 40          | 1729            | 106,5                                |

Source: Lietuvos statistikos., 2005.

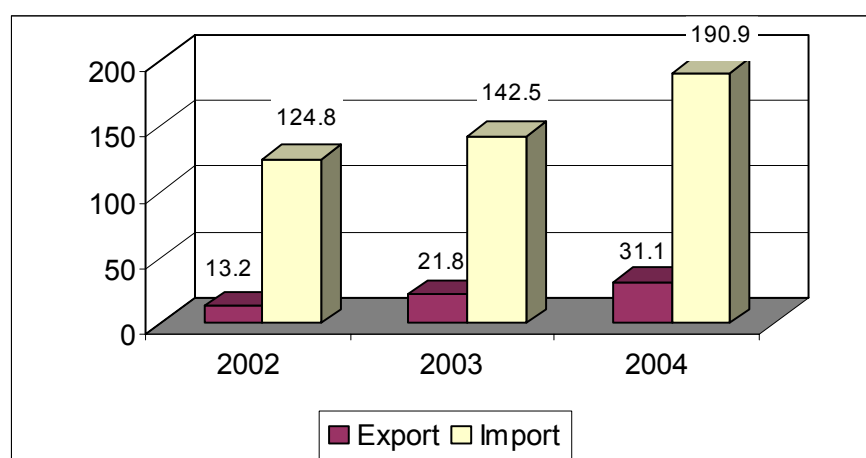
### The market of fruit

Strong spring frosts in 2004 affected the decline of fruit harvests in Lithuania, consequently the purchase of fruit reached 10 times of subnormal limit. The majority of orchards harvest was lost after the climatic disaster, in 2004 consequently the purchasing prices of fruit and berries increased 2.5 times comparing with 2003 (Table 2).

In 2004 apples comprised the majority of harvest (95 percent). In 2004 the strawberry harvest scope for sale was 11 times higher than in 2003. The local purchase of fruit is still too small as a consequence the import of fruit to Lithuania from the other European countries is high. In the fu-

ture after restoration of industrial orchards and expansion of fruit harvests, Lithuanian apples could reach the supply targets up to 50-60 percent of the local market (today this index is 30 percent). All the above mentioned shows that filling the local market with local products is still visionary process. Facing Poland's fruit and berries supply, Polish market is filled with imported fruit from Holland and Spain.

The market analysis pointed, that during the last 8 years import of apples has increased 11 times (from 4,8 thousand t to 53 thousand t). The last three years export-import balance of fruit was negative (Figure 2).



Source: Lietuvos statistikos..., 2005.

Fig. 2 Net export and import of fruit and berries in 2002–2004, in thou. tons

From May 1, 2004 Lithuania had applied the EU market regulations. The direct payments were begun to assign to growers (Cironkienė, 2004; Lietuvos žemės..., 2005). The direct payments for intensively supervising industrial orchards and berry plantations were started to be paid in 2002, when the EU standard quality compulsory requirements were applied first in practice in Lithuania. Currently Lithuanian growers managing the market forces, join the Lithuanian association of industrial orchards "Vaisiai ir uogos". This association has regional structure and conjoint the cooperatives of fruit growers. All cooperatives have implemented modern storage lodgement with refrigerating equipment. The trade is liberalised, the import distribution channels have stable structure, and they are favourable for future. The strong competitors will leave the local market performing with lower expenditure, higher quality and large scope of supply in long period.

### The cooperation patterns

All cooperative members who took part in the research are engaged in sales of the production, the other prevailing activity – the storage of production. Eight cooperatives conjoint the growers of fruit (the main growing fruit plants of cooperatives members – black currants), vegetable growers have established only 2 cooperatives, namely the vegetable cooperative "Daržovių centras" which has the largest turnover, and the members of this cooperative are dislocated in various regions of Lithuania.

The analysis of financial statement data helps find the best results of cooperatives, which possess the majority of long lasting capital. The financial support from the national and EU institutions influenced the development of cooperatives: the most successful cooperatives are those, which have implemented the financial support for modernisation and harvest storage technologies.

Their income is higher, because the supply to market subjects is equal and satisfies the market demand; the sales are more profitable in favourable moment.

The main problems of cooperatives – the low prices of production, the lack of customers, the weakness of co-operation under the deficit of material and other resources, the poor investigation abilities and skills of farmers. The cooperatives are still weak leaving the impact on fruit and vegetable market; consequently the aspect of co-operation organisation benefit is imperfect. Essential restriction for development of active cooperatives is the lack of financial resources.

The recognition of PO could help to solve the problems of fruit and vegetable growers and stabilise the market. According to the recognition requirements on rules (Paramos ..., 2005; Vaisių ..., 2005), the status of the analysed cooperatives have to be changed under the conversion to PO or preliminary recognised producer groups. The small amount of cooperatives correspond to the criteria of minimum number of members. PO could engage the cooperatives such as “Juodoji uoga“, “Šilauogė“ and “Daržovių centras“. In 2005 only one agricultural cooperative “Litbera“ could reach the targeted revenue of cooperatives of PO’s status.

According to the particularity of agriculture (shifting harvests), experience of foreign countries (Analysis..., 2004) the effectively performing PO manage revenue higher than the required minimum. The present conditions show that several PO could be developed in Lithuania to create 1-2 vegetable and one or several fruit PO.

### **The models of PO’s forming**

Several types of PO and preliminary recognised producer groups could act in Lithuanian market. The growers of open field vegetables could establish PO as “Association of Vegetables“. Although the analysis shows that the main members of such associations can become large growers of vegetables, equipped with modern market organisation implements (storage, assortment and other technologies). Their position in Association depends on political issues: under the consolidation they can solve the problems concerning quality, prices, elaborating legislative documents, and representation of interests. They ignore the possibility to be involved in PO together with small scale growers, and are afraid to lose their impact and independence.

The status of PO can get cooperative, ex. cooperative “Daržovių centras“, which is functioning and managing efficiently with sufficient long-term assets and high revenue (ca. 3 mln. LTL/per year). Trying to get PO status the cooperative “Daržovių centras“ has to increase technological capacity which is necessary to pursue the sales over PO, also the members of cooperative sale their production less than they produce.

The pattern for the establishment of fruit PO is possible under two scenarios: the first – “the cooperative of cooperatives“, the idea of which was formulated in 1998 (Ramanauskas, 1998, 2005), or several PO, which could consist of regional cooperatives with the same business interests and individual growers. In each case it is possible to make organisation structure as a new cooperative, the members of which are active cooperatives (at least five members have to join it), or reorganise the cooperatives by consolidation (in this case the structure of management is more correct).

According to the regional principle of PO, the pattern could be used to consolidate Aukštaitija region fruit growers, other pattern Žemaitija region fruit growers. In this case the producers’ organisation in Žemaitija region could get more than 800 thousand income from sales of production (according to the forecasts for the period of 2005) and could reach 1100 t cooling capacity (consolidation of such cooperatives “Arimaičių uoga“, “Litbera“, “Šiaurės Lietuvos uogynai“, “Uogakrūmis“ and one farmer). The PO of Aukštaitija region could get more than LTL 1 mln. income from sales and reach 900 t cooling capacity (conjoint cooperatives “Juodasis serbentas“, “Juodoji uoga“, “Šilauogė“, “Avuoga“ and one grower).

The following situation when single fruit PO exists (consolidation of all the mentioned cooperatives) shows that the income would be LTL 1.8 mln., and cooling capacity 2.2 thousand t. The consolidation in all cases could be efficient for producers organisation and competitiveness could increase rapidly (30 percent target market every year) in the common market.

One more case of PO appearance is the consolidation of members of greenhouse association to PO including non-producer joint stock company “Domeina“, which is producing large scale sales of greenhouses in total amount and operates as the central marketing management shift. Large discussions were provided concerning the participation of non-producers in PO, and the opinion

that the participation of non-producers in PO activity could be efficient without voting privilege was formed. The limiting procedures have been applied in practice for limiting domination in organisation. This situation supposes the reality that no PO exists in Lithuania at the moment, because growers have no appropriate technologies, managerial trading items and relations with the local trade system.

The consolidation of growers with the joint stock company "Domeina" could increase the impact of growers on the market and get financial support from the EU for PO.

The results of the research show the possible PO establishment models that were presented in seminars and meetings with members of cooperatives and board members of enterprises. The encouraged finding consolidation forms a preparatory plan for the establishment of a PO and defence of agricultural activists positions on the market. The patterns for the PO establishment depend on interests and will of active people.

## Conclusions

1. The co-operation development of fruit and vegetable sectors is insufficient. Active cooperatives have no impact on market processes. The main restriction for the development of co-operation is the lack of investments.

2. The recognition of cooperatives as PO could help the growers to apply co-operation advantage and receive the EU financial support.

3. Fruit and vegetable growers can strengthen their market positions and increase competitiveness in the EU market under the concentration of supply.

4. According to the analysis of co-operation of fruit and vegetable producers and higher supply concentration principle, the PO's patterns are presented to consolidate cooperatives and establish 1-2 vegetables and one or several fruit PO in Lithuania.

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## Technical and scale efficiency in Austrian dairy farming

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### **Abstract:**

The number of dairy farms in Austria has decreased during the last decade. Comparisons with other European countries reveal that dairy farms in Austria are quite small. Thus there is a serious concern about the competitiveness and efficiency of the dairy sector in the future. The objective of this study is to measure efficiency scores of Austrian dairy farms and to examine the relationship between efficiency and farm size. Data envelopment analysis (DEA) was applied to a sample of 222 highly specialised dairy farms. The results show an average technical efficiency of 79 % and a scale efficiency of 94 %. This suggests that natural conditions and management practices had a stronger impact on technical efficiency than farm size. An analysis of returns to scale revealed that 18 % of the sample farms were operating at constant returns to scale, 9 % above and 73 % below efficient scale.

**Key words:** Dairy farming, Efficiency, Austria, Returns to scale, Data Envelopment Analysis (DEA).

### **Introduction**

Dairy farming traditionally plays a crucial role in Austrian agriculture. With about 900 Mio. € of revenues in 2004, the dairy sector was the largest farm sector and contributed about 15 % to the total agricultural production value (BMLFUW, 2005). As a result of the specific agro-climatic conditions grassland management and dairy farming prevail in the mountainous parts of Austria. About two third of total milk production originate from those regions. Due to increasing competition on markets and the small structured character of Austrian dairy farms many farmers phased-out milk production. From 1995 to 2003 the total dairy cow population decreased by 17 % to 558,000 whereas the average number of dairy cows per farm increased from 7.8 to 8.8. However, the development showed significant differences between herd sizes. Whilst the number of dairy cows and farmers of small farms with less than 10 cows per farm decreased by 48 % and 38 % respectively, large farms experienced a considerable increase. The number of farms and dairy cows in the class with more than 30 cows grew by 1,000 and 43,000, meaning an increase by more than 180 % in both figures (AWI, 2005).

Similar results obtain from an analysis of the milk quota distribution. In 1998 more than 31,800 (42 %) milk suppliers had a quota of less than 20 t. Six years later their number declined by 13,500 (43 %) and their contribution to total milk supply by about 190,000 kg (almost 50 %). During the same period the number of farms with a quota of more than 100 t almost doubled, and their supply trebled. These developments indicate a disproportionate loss of small farms. According to a study by KIRNER (2005) a milk quota of some 70 t per farm was found to be a growth barrier. Whilst farms below this quota experienced a decrease in number and amount of supply, those with more than 70 t showed an opposite development. However, a further rise of the growth barrier level can be expected in the future.

Major outcomes of the recent CAP-reform for the dairy sector (single farm payment scheme, price reductions for butter and skimmed milk powder) may be going to support these structural changes in Austria. Despite compensations for natural disadvantages and environmentally friendly production techniques competitiveness and efficiency are increasingly becoming key determinants in dairy farming. That raises the ques-

tion about the determinants of efficiency differences between farms. Therefore, the present paper has two objectives. The first is to analyse and assess technical efficiency (TE) of a sample of Austrian dairy farms, and the second to examine interrelations between farm size and efficiency. The paper is structured as follows. After a short introduction to Data Envelopment Analysis (DEA), the following chapter describes the data used. In chapter 3 the results of the analysis are presented. The final chapter provides a discussion of the results along with a summary of the findings.

### Method

DEA is a data oriented, non-parametric, deterministic approach for evaluating the performance of a set of peer entities called Decision Making Units (DMUs) which convert multiple inputs into multiple outputs (COOPER et. al., 2004). Unlike other methods (e.g. traditional regression methods) DEA constructs a frontier by comparing the data of each DMU with data of benchmark DMUs that perform better. Observations lying on the production frontier are defined as technically efficient (TE) those lying below the frontier are considered inefficient. The frontier is composed by solving linear programming models for each DMU. At first the efficiency score of a DMU is calculated (1) and used to detect input slacks or output surpluses in a second step (2).

$$\begin{aligned} \theta^* &= \min \theta \\ \text{subject to} \\ (1) \quad &\sum_{j=1}^n x_{ij} \lambda_j \leq \theta x_{i0} \quad i = 1, 2, \dots, m; \\ &\sum_{j=1}^n y_{rj} \lambda_j \geq y_{r0} \quad r = 1, 2, \dots, s; \\ &\lambda_j \geq 0 \quad j = 1, 2, \dots, n. \end{aligned}$$

$$\begin{aligned} &\max \sum_{i=1}^m s_i^- + \sum_{r=1}^s s_r^+ \\ \text{subject to} \\ (2) \quad &\sum_{j=1}^n x_{ij} \lambda_j + s_i^- = \theta^* x_{i0} \quad i = 1, 2, \dots, m; \\ &\sum_{j=1}^n y_{rj} \lambda_j - s_r^+ = y_{r0} \quad r = 1, 2, \dots, s; \\ &\lambda_j, s_i^-, s_r^+ \geq 0 \quad \forall i, j, r \quad j = 1, 2, \dots, n. \end{aligned}$$

Dairy farms usually have more control over their input variables rather than their output variables. Therefore, the dual input-oriented linear programming model, as originally presented in CHARNES et al. (1978), was chosen for our study:

where  $\theta$  is a scalar representing the efficiency score,  $\lambda$  is a vector describing the contribution of benchmark DMUs to the virtual DMU,  $x$  and  $y$  are input and output values respectively,  $s^-$  and  $s^+$  are slacks (input reduction) and surpluses (output increase) used to convert inequalities to equivalent equations. The value of  $\theta^*$  represents the efficiency score of the  $j$ -th farm. Given the observed sample and model specification, a value of less than one indicates an inefficient farm, which could improve its efficiency by reducing inputs proportionally.

The specified model above assumes constant returns to scale (CRS, CCR-model). However, if agricultural farms operate in an environment with variable returns to scale (VRS, e.g. law of diminishing returns), doubling of all inputs would lead to a less than or greater than a doubling of all outputs. A DMU to be considered as CCR efficient must be both scale and technical efficient. A BCC efficient DMU only needs to be technically efficient (BOWLIN, 1998). BANKER et. al. (1984) addressed this problem at first by imposing an additional convexity constraint to the model (BCC-model):

$$(3) \quad \sum_{j=1}^n \lambda_j = 1$$

Figure 1 graphically illustrates the relationship between CRS and VRS. Under CRS the best-practice frontier is a single ray emanating from the origin. To be on the technical efficiency frontier a farm would have to be operating at its efficient scale. Under VRS, a convex, piece-wise linear frontier determines best practice and reflects the differing rates of input to output combination efficiencies by size of operation (see BARNES and OGLETHORPE, 2004). From three different farms (A, B, C) only farm B is operating at efficient size as it touches the CRS-ray. Farm A lies on the VRS-frontier but not on the CRS-frontier and represents therefore only pure technical efficiency but not scale efficiency. Experiencing decreasing returns to scale a reduction in size would improve scale efficiency of farm A. Farm C is neither technical nor scale efficient. Overall inefficiency of

farm C can be decomposed in technical inefficiency and scale inefficiency. Hence, farm C could increase its scale efficiency by moving up on the VRS-frontier and its technical efficiency by reducing its inputs.

For the determination of increasing (IRS), constant (CRS) or decreasing returns to scale (DRS) different procedures have been developed (see FARE et. al. 1985 and BANKER et. al. 1984). For the present study the approach proposed by SEIFORD and ZHU (1999) was chosen; it requires the solution of a CCR and BCC model. First, all farms are selected that show the same optimal values in both models. These farms exhibit CRS. For all other farms the sums of weights ( $\sum \lambda_j^*$ ) are calculated and used for the determination of IRS or DRS. If  $\sum \lambda_j^*$  of a farm is less than 1 IRS prevails on DMU<sub>j</sub>, otherwise DRS.

By considering all in- and outputs simultaneously data envelopment analysis (DEA) offers two main advantages in estimating efficiency scores. First, it does not require the assumption of a functional form to specify the relationship between inputs and outputs, and second, it does not require an assumption about the distribution of the inefficiency term. However, DEA results need to be interpreted with care as they do not take into account the differences between farms in respect of operating environment, farm management and trade-off between the different inputs and outputs. Limitations of DEA concern the

implicit assumption that all differences in performances of different DMUs are caused by inefficiencies (e.g. errors in measurement could be interpreted as inefficiencies). But in reality, some of the differences between the actual and predicted best performance may be due to data and measurement errors, while stochastic frontier analysis (SFA) recognizes the possibility of stochastic errors in measurement of inefficiencies.

## Data

Data for the present study were obtained from the voluntary farm accounting data network which collects recordings of some 2,400 Austrian farms. This sample offers a representative profile of Austrian agriculture covering 54 % of farms and 95 % of dairy cows (BMLFUW, 2004). By definition 550 of the 2,400 farms belong to specialised dairy farms, i.e. more than 75 % of their standard gross margin originates from forage cropping and their standard gross margin from milk production exceeds that from cattle fattening.

Although the majority of these dairy farms primarily focus on the production of milk, some of them sell also crops, fatten bulls or keep other animals. To secure a high level of homogeneity within the sample for the study in hand, additional conditions must be met:

- revenues from diversification (e.g. direct marketing, farm holidays) must be less than 10 %
- revenues from cash crops must be less than 10 % and

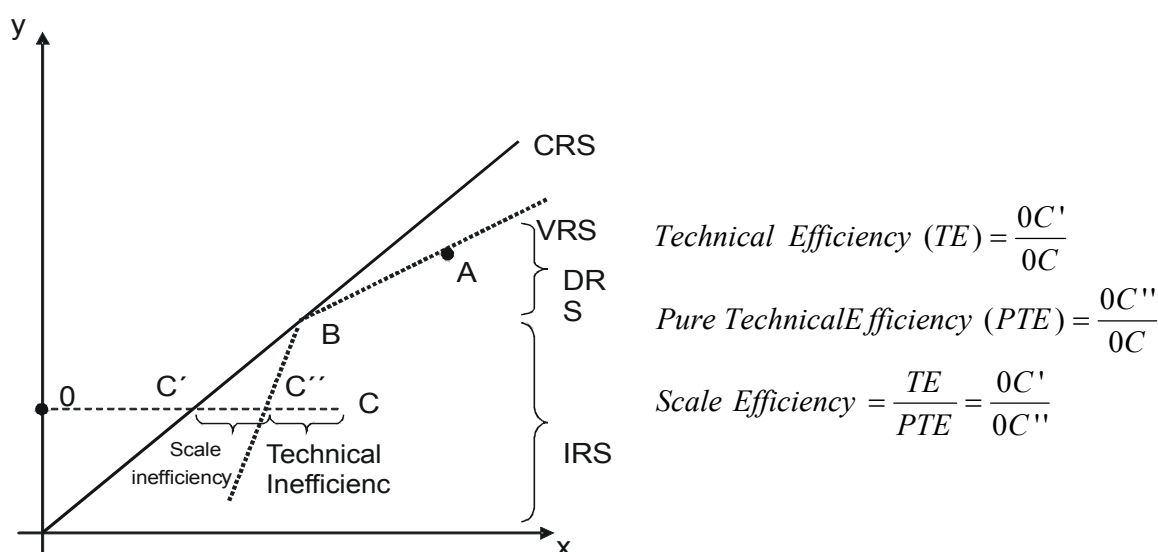


**Fig. 1 Relationship between inefficiencies and returns to scale**

■ at least 95 % of livestock units must be cattle.

222 dairy enterprises fulfilled the conditions above and provided data for the years 2001, 2002 and 2003. In order to mitigate the influence of extraordinary events during individual years, the averages of three years was taken as a basis for the DEA analysis.

DYSON et al. (2001) suggest that to achieve a reasonable level of discrimination between efficiency scores the number of DMUs should be at least the double of the product of the number of inputs and outputs. By considering two outputs and six inputs this condition was fulfilled. Outputs are the total quantity of milk produced minus milk for feeding purposes per year (in kg) and other revenues (excluding revenues for milk and direct payments). Inputs involve activities that have impact on revenue, such as expenses for animal husbandry (e.g. feed, vet), expenses for machinery and energy (e.g. fuel, repair) and other expenses (taxes, insurances); these three inputs are measured in € per farm. The other three are utilized agricultural area (UAA) in ha, labour (in unpaid family work units FWU) and heavy livestock units. CLOUTIER and ROWLEY (1993) compared the distribution of efficiency scores across Canadian dairy farms between 1988 and 1989

using three outputs (total quantity of milk, revenue milk sale, other revenue) and five inputs (herd size, labour, cultivated land, animal feed, other inputs) of 187 farms. Table 1 summarises the characteristics of the in- and outputs of the selected sample farms.

## Results

Table 2 presents a summary of results on technical efficiency (TE), pure technical efficiency (PTE) and scale efficiency (SE) scores. The sample farms have an average TE of 79 %; thus if all farms were able to move to the efficient production frontier, this would result in a proportional reduction by 21 % of all inputs. BARNES and OGLETHORPE (2004) split their sample into two farm types depending on the number of dairy cows per farm (more or less than 90); regarding three years TE ranged between 60 % and 73 %. A study of New Zealand dairy farms presented an average TE of 83 % (JAFORULLAH and WHITEMAN, 1998). Other dairy studies conducted in Australia, the Netherlands and Great Britain calculated an average TE of 52 %, 78 % and 87 %, respectively (FRASER and GRAHAM 2005, REINHARD et. al. 2000, GERBER and FRANKS 2001).

Table 1

### In- and Outputs of the 222 sample farms

| Variables          | Unit | Input/Output | Mean    | Min.  | Max.    | Std. Dev. |
|--------------------|------|--------------|---------|-------|---------|-----------|
| Quantity of milk   | kg   | O            | 104,317 | 9,833 | 329,691 | 61,054    |
| Other revenue      | €    | O            | 26,669  | 3,665 | 62,709  | 12,138    |
| Animal husbandry   | €    | I            | 13,005  | 1,515 | 440,455 | 8,579     |
| Machinery & Energy | €    | I            | 13,364  | 2,377 | 34,415  | 5,951     |
| Other expenses     | €    | I            | 17,801  | 3,767 | 63,592  | 9,849     |
| Cultivated land    | ha   | I            | 22.04   | 4.13  | 66.36   | 10.12     |
| Livestock units    | LU   | I            | 30.68   | 5.98  | 75.96   | 13.84     |
| Labour             | FWU  | I            | 1.85    | 0.61  | 3.82    | 0.54      |

Table 2

### TE, PTE and SE of 222 sample farms

|                    | Unit   | TE | PTE | SE |
|--------------------|--------|----|-----|----|
| Efficient farms    | Number | 35 | 54  | 41 |
| Mean efficiency    | %      | 79 | 84  | 94 |
| Minimum efficiency | %      | 39 | 51  | 39 |

Implementing variable returns to scale (VRS) in the model, about a fourth of the sample farms exhibit pure technical efficiency. The average PTE score is 84 %. Accordingly, scale efficiency (SE) is quite high (94 %); only 6 % of total inefficiency could be removed by an adoption of the efficient farm size (see Table 2). About 75 % of all farms have a SE of more than 90 %. The lower score of PTE in comparison to SE indicates that TE is predominately influenced by PTE rather than by SE. Hence, management practises and natural conditions had a stronger influence on technical efficiency than farm size. Several reasons may explain this outcome. Despite our restrictive data selecting process there are still differences between the dairy farms for instance in terms of agro climatic conditions and soil quality. Other impacts may originate from different socio-economic backgrounds and farmers' objectives. Several papers analysed the relationship between education level of farmers and technical efficiency and found a positive relationship (e.g. see STEFANOY AND SAXENA, 1988). However, unlike in that study our results show no significant correlation between education level and efficiency scores.

Distributions of TE and PTE follow similar patterns (see Figure 2). Most farms show an efficiency level between 0.7 and 0.9. Almost one fourth of all farms operates at the pure technical efficiency frontier. But the distribution of SE is quite different. About 58 % of all farms belong into the scale efficiency class between 90 and less than 100 %.

Basically three different constitutions of returns to scale (RTS) are possible. In case of CRS a doubling of all inputs would also double all outputs. Otherwise VRS is exhibited. In this case farms do not operate on efficient scale and show either increasing IRS or decreasing returns to scale (DRS). Table 3 summarises characteristics of different farm types according to their distribution of RTS. The bulk of farms (162 farms or 73 %) were operating on IRS. Hence, increasing all inputs by one percent would result in an increase of output of more than one percent. On the other hand 19 farms show DRS. Generally, scale inefficiencies for IRS farms are greater than for DRS farms and indicate that a scaling up in size would have greater effects on efficiency for small farms than a size reduction of large farms.

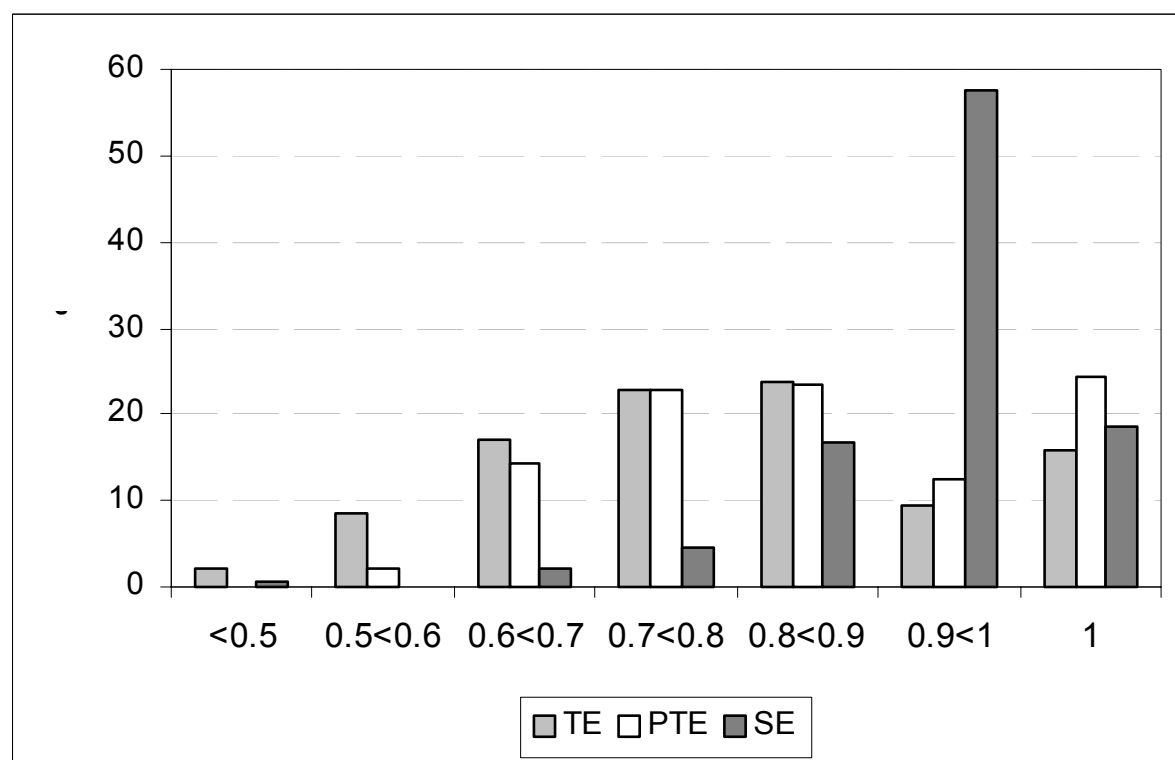


Fig. 2 Distribution of farms according to TE, PTE and SE

Differences between farms with CRS, IRS and DRS are evident from Table 3. Farms operating at an efficient scale keep on average 22.6 dairy cows and manage about 22 ha utilised agricultural area. Concerning the proportion of grassland DRS farms show the lowest share which means that on these kinds of farms arable farming is more important. Differences in farm sizes are also reflected in economic indicators (e.g. agricultural income). The high level of direct payments of DRS farms (31,851 €) originates on the one hand from market supports (e.g. area based) and on the other hand from payments based on

less favoured area status. On average, DRS farms have almost 139 mountain farm cadastre points which is additionally confirmed by a high average altitude (725 m above sea level).

Figure 3 contrasts the distribution of RTS with respect to utilised agricultural area and number of livestock units. As pointed out in table 3 the majority of farms (73 %) operates at IRS. Both figures show similar distributions. In the case of utilised agricultural area only 17 % of the farms with less than 10 ha exhibit CRS. There are increasing percentages of farms with DRS as areas increase. In the class with more than 40 ha UAA,

Table 3

### Selected farm characteristics differentiated by returns to scale

| Variables                     |        | CRS     | DRS     | IRS    | Total   |
|-------------------------------|--------|---------|---------|--------|---------|
| Number of farms               | number | 41      | 19      | 162    | 222     |
| TE                            | score  | 0.97    | 0.83    | 0.74   | 0.79    |
| PTE                           | score  | 0.97    | 0.85    | 0.81   | 0.84    |
| SE                            | score  | 1.00    | 0.97    | 0.92   | 0.94    |
| UAA*                          | ha     | 21.88   | 35.43   | 20.51  | 22.04   |
| Grassland in % of UAA         | %      | 74.62   | 70.22   | 76.11  | 75.33   |
| Heavy Livestock unit          | no.    | 32.95   | 46.73   | 28.22  | 30.68   |
| Dairy cows                    | head   | 22.64   | 27.27   | 16.77  | 18.76   |
| Milk quota                    | kg     | 135,556 | 162,464 | 84,207 | 100,388 |
| Milk production (brutto)      | kg     | 153,128 | 184,609 | 99,661 | 116,806 |
| Agricultural income           | €      | 34,086  | 48,749  | 22,019 | 26,535  |
| Direct payments               | €      | 15,494  | 31,851  | 15,726 | 17,063  |
| Standard gross margin         | €/farm | 29,241  | 38,248  | 23,308 | 25,683  |
| Mountain farm cadaster points | score  | 95      | 139     | 111    | 111     |
| Sea level                     | m      | 636     | 725     | 622    | 634     |
| Agricultural education**      |        | 2.66    | 2.58    | 2.35   | 2.42    |

\* alpine pastures included.

\*\* 1 = none, 2 = vocational or apprentice school, 3 = master craftsman, 4 = high school or university.

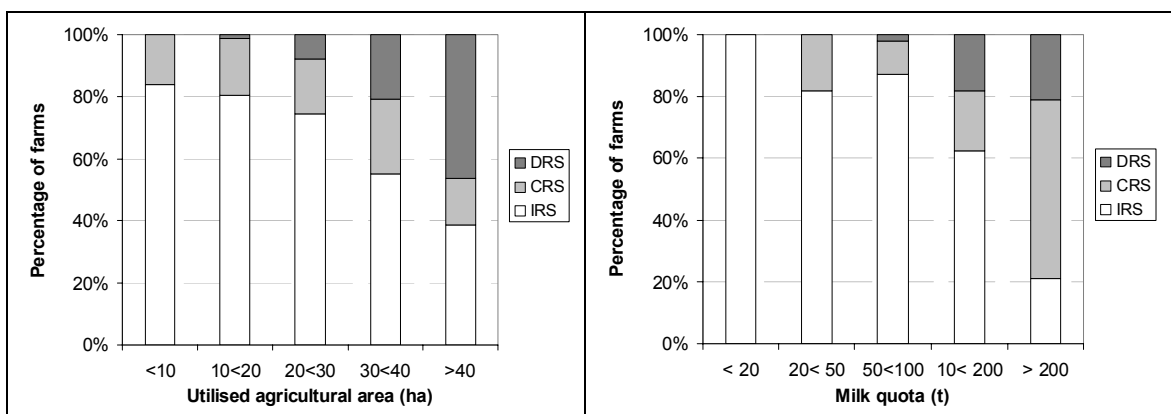


Fig. 3 Distribution of RTS according to different farm sizes (UAA and livestock units)

half of the farms show DRS although 40 % of the farms still exhibit IRS. The distributions of CRS-farms follow more or less a constant pattern. In terms of milk quota there are no farms operating at CRS or DRS with less than 20 t.

Taking into account that DEA only measures the relative efficiency within the sample, the study provides evidence that technical and scale inefficiencies exist in Austrian dairy farms. Similar results were obtained by BARNES and OGLETHORPE (2004). Their findings indicate that large farms would benefit from reductions in scale, whereas small to medium farms are recommended to increase farm size, and the latter group would obtain greater efficiency scores from such changes. JAFORULLAH and WHITEMAN (1998) found that more than half of the sample dairy farms were operating at below their efficient scale and consequently could increase their technical efficiency by increasing farm size. GERBER AND FRANKS (2001) examined scale efficiencies for farms in England and Wales and found that dairy farms with herds between 70 and 160 cows operated at constant returns to scale, whereas farms with less or more cows showed diseconomies of scale.

Even though the farms in the present study are quite small, a comparison between sample farms and all dairy farms in Austria reveals that the enterprises chosen for this study are above average in terms of farm size (see Figure 4). In particular, the number of dairy cows and the amount of milk quota per sample farm is more than twice the Austrian average. A considerable difference exists also in the proportion of organic farms which is higher in the sample. Consequently, it can be concluded that the majority of Austrian dairy farms show even higher scale inefficiencies than the sample farms.

## Summary and conclusions

This paper focuses on the measurement of technical, pure technical and scale efficiency for a sample of 222 highly specialised dairy farms in Austria. Data envelopment analysis (DEA) was used to obtain different kinds of efficiencies which were used to determine returns to scale for each farm. The analysis revealed an average level of technical, pure technical and scale efficiency of 79 %, 84 % and 94 %, respectively and was thus in line with the findings of other studies on dairy farming. Primary attention was paid to the determination of returns to scale. The analysis exhibited considerable variability among farms operating at increasing, constant or decreasing returns to scale. In general, scale efficiency was quite high (94 % on average). Farms operating at increasing returns to scale have a higher potential (8 % scale inefficiency) to increase their scale efficiency than farms operating at decreasing returns to scale (3 % scale inefficiency).

Technical efficient farms were found in different size categories, indicating that beside of farm size also management skills and other factors play an important role. Compared to other EU-countries dairy farms in Austria are still very small. For many farms there should be a potential to increase efficiency and agricultural income at the same time. But the move to an efficient scale is subject to investment decisions which may take a long time to materialise. F.i. to buy one kg of milk quota affords today the investment of 8 Cent per year over 8 years (derived from a quota price of 80 Cent per kg), in addition to direct costs of 20 Cent per kg milk produced (in 2004). Farms in mountainous regions which are highly dependent on special topography and agro-climatic conditions have almost

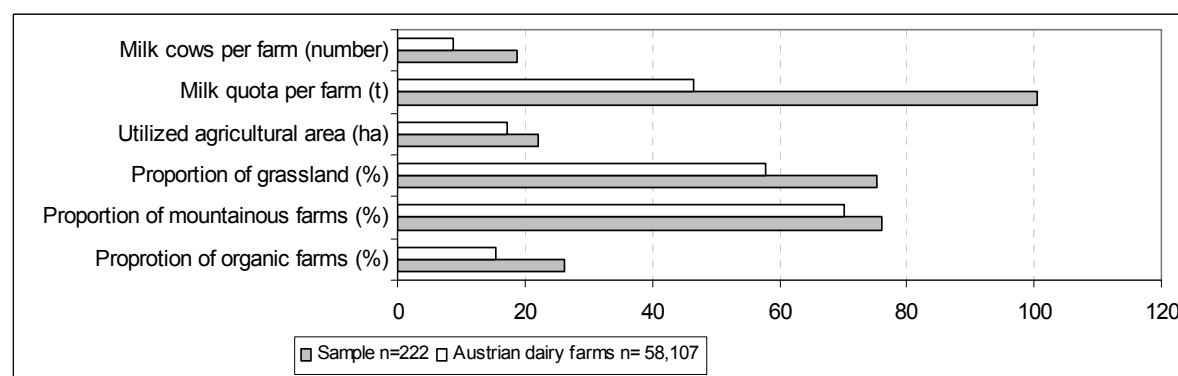


Fig. 4 Comparison between the sample data set and all Austrian dairy farms

no alternatives to dairy farming for the provision of income. The paper produced evidences that the average efficient size of dairy farms in Austria may be smaller than in other countries.

According to the results further analysis focussing on farm management practises in detail would be of interest. In this context the Austrian Agri-Environmental Programme plays a crucial role for Austrian farmers. Depending on what measurements were chosen farmers subject to different production standards (e.g. reduction of fertilizers and pesticides) and may influence their relative efficiency. Different cost structures for land tenancy and milk quota may have other important impacts on competitiveness and efficiency. Considering future challenges (liberalisation of agricultural markets, increasing demands on animal welfare, food safety and environment protection) an increase of farm size might not be the only alternative to secure farm existence. According to the diverse character of dairy farms in Austria several other strategies are feasible (e.g. milk processing on farm and/or direct marketing). Disregarding scale efficiency the results of the study may prove this statement as efficient farms (pure technical efficiency) were found in all return to scale classes.

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## **Differentiation of functional structure of rural communes - elaborated on the basis of survey in Mazovian Voivodship**

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### ***Abstract***

The paper shows typology of 36 surveyed rural communes in Mazovian Voivodship. Presented types of communes were defined according to three criteria: criterion of their functions, described by local authorities in a questionnaire interview (2003-2004); criterion of similarities in their social and economic situation, which was elaborated by Ward's method cluster analysis of selected data from the Regional Data Bank 2003, released by the Central Statistical Office; and the last criterion – geographic location, especially distance from larger cities, main railways and roads. The paper is illustrated with maps and graphs.

**Key words:** multifunctional development, rural areas, typology of communes, cluster analysis - Ward's method.

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### **Introduction**

Multifunctional development of rural areas is a multi-stage economic and social process aimed at widening and varying economic structure through developing non-agricultural functions of the village. Its target is to create new sources of income as well as to improve living standards and safety of rural population. Multifunctional development is a complex idea, where numerous problems of agriculture and rural areas must be treated jointly, including development of educational system, infrastructure, entrepreneurship, human capital, etc. (Kłodziński M., 2004).

Despite direct correlations between problems of rural areas and agriculture, functions performed by agriculture but not connected with traditional functions of food production make a separate problem called multifunctionality of agriculture. It is aimed at diversification of agricultural production (Adamowicz M., 2004).

Problem of multifunctional development of rural areas is not new in Polish economic literature. However, new conditions arising during transition of the economic and social system, as well as membership in the European Union, make us look into and discuss this problem again.

### **Research sample**

The aim of this elaboration is to present our conclusions on multifunctional development, based on surveys and questionnaires carried out in 36 rural communes in Mazovian Voivodship in 2003 and 2004.

Each region of Poland is characterized by different conditions of development, different possibilities and barriers. As a result we can find on the economic map of Poland and of separate voivodships rural areas that:

- a) are situated close to large cities and agglomerations, which make a considerable outer source of rural areas multifunctionality;
- b) typically rural, where we can observe weaknesses typical for this sector of economy;
- c) are 'handicapped' or neglected; where development difficulties afflict both agriculture and non-agricultural forms of economic activity; these areas face a continually increasing number of problems, thus creating 'poverty pole' as opposed to developing multifunctional regions.

Mazovian Voivodship, created after the administrative reform in 1998, is the largest and most differentiated voivodship in Poland – it takes up 11.4 per cent of the country. It is slightly moved to the East and that is why it is not strictly the centre of Poland. However, because of the political and economic role played by Warsaw it is often de-

financed as the central voivodship. Despite the fact that it takes the first place considering the pace of economic development and economic activity, we must remember that mainly Warsaw produces such outstanding statistics. Warsaw attracts foreign investors, it is a leader of domestic entrepreneurship, and together with surrounding towns it makes a centre of industry and services. Warsaw stands out on the economic map of our country. The capital also significantly influences all surrounding communes. However, the farther from Warsaw, the more communes or even whole poviats where the economic situation is very difficult. Communes selected for our study fully reflect this differentiation within borders of Mazovian Voivodship.

The survey consists of 36 (16 per cent) of rural communes situated in six poviats (NUTS IV) within borders of four sub-regions (NUTS III) in Mazovian Voivodship.

1. in **ciechanowsko-płocki** subregion, **żuromiński** powiat, communes:

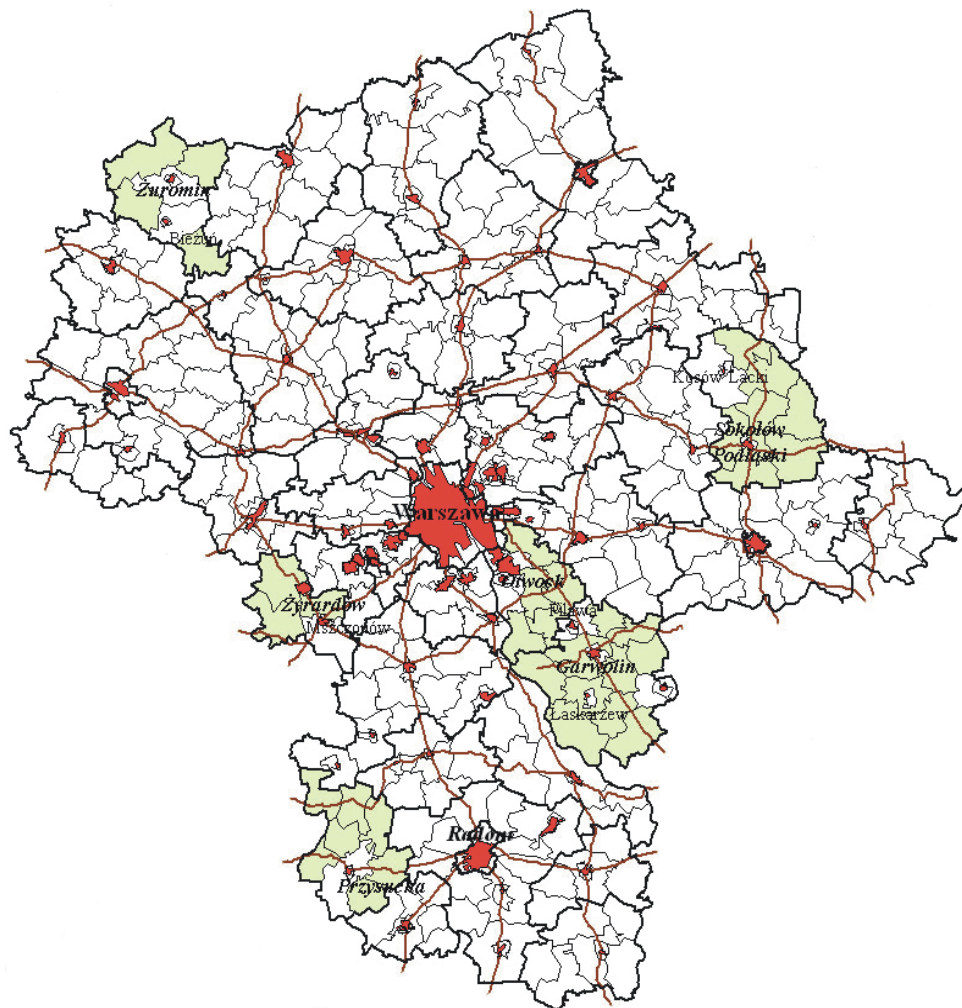
- Lubowidz, Lutocin, Kuczbork-Osada, Siemiatkowo Koziebrodzkie;

2. in **ostrołęcko-siedlecki** subregion, **sokołowski** powiat, communes:

- Ceranów, Sterdyń, Jabłonna Lacka, Sabnie, Repki, Bielany, Sokołów Podlaski;

3. in **warszawski** subregion, **otwocki** powiat: Sobienie Jeziory, Osieck, Celestynów, Wiażowna, Kolbiel and in **żyrardowski** powiat: Wiskitki, Radziejowice, Puszcza Mariańska;

4. in **radomski** subregion, **garwoliński** powiat: Parysów, Borowie, Miastków Kościelny, Górzno, Garwolin, Łaskarzew, Sobolew, Trojanów, Maciejowice, Wilga and **przysuski** powiat: Kłwów, Potworów, Odrzywół, Borkowice, Rusinów, Gielniów, Wieniawa.



Source: authors' elaboration.

Fig. 1 Geographic location of surveyed communes towards main roads and cities

Such selection of surveyed communes enables to define the level of multifunctional development in communes which are:

- directly and strongly influenced by a large agglomeration (because of location close to it),
- typically agricultural, experiencing difficulties resulting from diminishing agriculture and its income ineffectiveness,
- peripheral and characterised by structural difficulties resulting both from poor condition of agriculture and from underdevelopment of other fields of economy.

Typology of 36 surveyed rural communes was elaborated according to three criteria:

1. functions, defined by local authorities in individual interviews carried out in 2003 and 2004;
2. similarity in economic and social situation: to elaborate it, we used Ward's cluster analysis of data from the Regional Data Bank (2003) released by the Central Statistical Office;
3. geographic location, especially distance from larger cities, main railways and roads.

### Typology of communes according to their different functions

In 2003 and 2004 local authorities of 36 surveyed communes answered questions about problems with multifunctional development of rural areas. All questions were asked during interviews, which allowed to define types of communes. The main criterion was the role played by agriculture in the economy of the commune and its non-agricultural functions.

Most surveyed communes were described (by their authorities) as mainly agricultural – 32 (89 per cent), while only 4 (11 per cent) were defined as rural communes of suburban character, under a strong influence of Warsaw agglomeration. The group of **agricultural communes** includes all rural communes of sokołowski, garwoliński and żyromiński powiaty. There are five sub-groups in it:

- 1) communes producing vegetables mainly,
- 2) communes producing fruit,
- 3) communes of diminishing double employment,
- 4) communes of problematic agriculture,
- 5) communes of developing agriculture.

In opinion of local authorities and inhabitants, Sobienie-Jeziory commune, which has 2000 ha of orchards should be a separate type –

**fruit-growing commune**. However, one can notice that fruit production is being slowly replaced by a more profitable vegetable production there. In this case producers can use well developed storage plants.

It should be stressed that the situation in the labour market in communes growing fruit and communes growing vegetables in hot-houses is much better, and so is the farmers' income level. That is why they were separated as another group including Klwów and Potworów in przysuski powiat as well as Maciejowice in garwoliński powiat.

The third sub-group consists of communes described by their authorities as agricultural but the agriculture is neglected and in poor condition. Return to farming is caused partly by redundancies in industry of large cities. In this group, we find Lubowidz and Kuczbork-Osada in żyromiński powiat, Wieniawa and Borkowice in przysuski powiat. These communes used to be quite similar to suburban communes because of double employment of their inhabitants in the past.

There is also a group of **strictly agricultural** communes. It is divided into two sub-groups: communes with **highly problematic agriculture** Sterdyń, Rusinów, Odrzywół, Źaska-rzew (local authorities claim that even 70 per cent of farms might be liquidated if their owners could be employed in non-agricultural sectors), Sobolew (poor land, farmers are interested in growing forests).

**Communes focused on development of agricultural production** make the second category in this sub-group. Within this group we listed Siemiatkowo Koziebrodzkie, Ceranów and Sokołów (inhabitants want to return to agricultural production, despite double employment in the past), Bielany (there is an easily noticeable difference between villages where young farmers buy out all the good land and villages that are 'dying out'), Maciejowice (demand for good land near the Vistula river), Trojanów. The process of self-merger of land is typical for these communes – young farmers buy land from their neighbours. This causes an increase in prices of the land and lack of interest in developing recreation functions of the commune, even if it has favourable climate and beautiful landscape. Inhabitants are not interested in growing forests, either. After some time the process of purchase and sale of land gets slower and slower, up to a point where demand is bigger than supply (e.g. Maciejowice,

Trojanów). Another interesting feature of these communes is lack of non-agricultural economic activity as the inhabitants are not interested in it. However, it would be treated as something useful and needed, if it used their products. At present inhabitants are not interested in taking up such activity themselves, leaving this field to other (not local) entrepreneurs and investors.

The second group – **rural communes of suburban character** – are located in otwocki powiat (Wiązowna, Kołbiel, Celestynów) and in żyrdowski powiat (Radziejowice, Wiskitki).

There are two sub-groups: one of dwelling character and one of recreation character.

**Dwelling function** of rural communes is directly connected with commuting to large cities. Inhabitants of such communes often call them 'bedrooms of Warsaw'. In the past, most inhabitants were double employed. At present, agriculture plays insignificant, marginal role here. The majority of population is employed in Warsaw or smaller cities nearby. The rest of inhabitants run non-agricultural businesses; farmers make the smallest share.

**Recreation function** of suburban communes is best visible in Radziejowice, Kołbiel and Wilga, although the mentioned communes often combine dwelling and recreation functions. There are also other examples: a lot of people buy land in picturesque rural communes on the Bug river; agricultural commune Odrzywów also tries to develop recreation function taking advantage of beautiful areas on the Piliczka and Drzewiczka rivers; another commune, Miastków Kościelny, has a very interesting post-glacial landscape. Some communes, for instance Puszcza Mariańska, are in the process of transformation: from strictly agricultural functions to recreation and dwelling ones.

Among the surveyed communes no one was described by authorities as an agrotouristic one, although embryos of agrotourism can be found in some of them.

Cluster analysis of surveyed communes

In order to define differences and similarities, we used 18 data categories (characteristics). Ward's cluster analysis (Rószkiewicz M., 2002) allowed to show similarity level of surveyed communes, taking into consideration all these 18 characteristics (BDR data, 2003, CSO), which most influence the differentiation of multifunctional development and that are given the following symbols, describing:

1. level of non-agricultural income of inhabitants and commune budget revenues from income tax, described by:

C1 – sum of due income tax in 1999-2003 per 1 inhabitant of production age (thous. PLN);

C2 – commune budget revenues from income tax paid by legal entities in 1999-2003, (thous. PLN);

2. structure of main sources of income, described by per cent of population living mainly on:

C3 – full time job;

C4 – work not connected with their farms and agriculture;

C5 – work on their own farms;

C6 – pensions and retirement pensions;

3. unused labour resources:

C7 – unemployment rate;

C8 – percentage of people unemployed for more than 13 months (it decreases significantly the income level and market demand as well as increases passive attitudes);

4. 'knowledge capital'; education of inhabitants:

C9 – percentage of university and post-secondary graduates;

5. investments in surveyed communes:

C10 – sum of investment expenditures from commune budgets in 1996-2002 (thous. PLN)

6. structure of farms, according to economic activity and size of farms:

C11 – percentage of farms running only agricultural activity;

C12 – percentage of farms running both agricultural and non-agricultural activities;

C13 – percentage of farms running no activity;

C18 – share of farms with more than 15 ha of arable land;

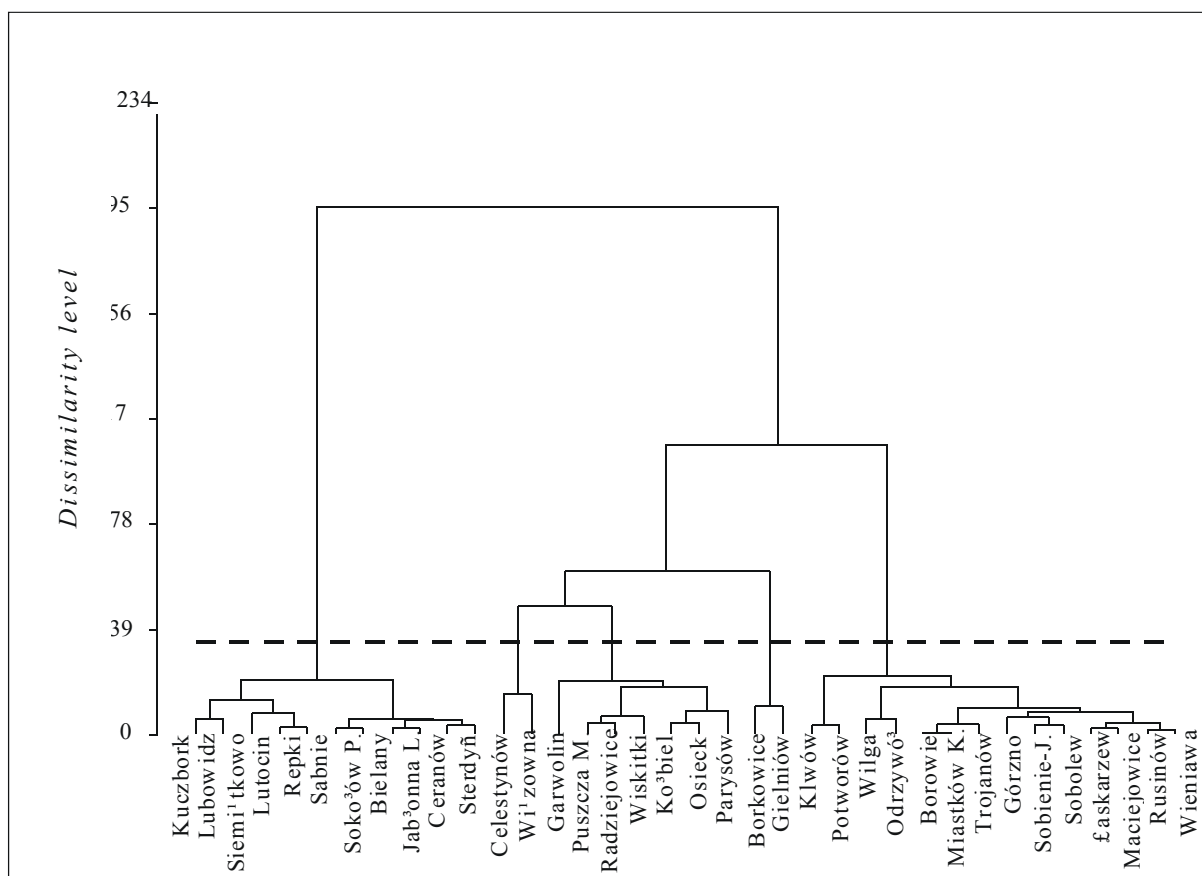
7. structure of population working on their own farms (by arable land area):

C14 – per cent of people working on farms up to 5 ha;

C15 – per cent of people working on farms between 5 to 10 ha;

C16 – per cent of people working on farms between 10 to 15 ha;

C17 – per cent of people working on farms bigger than 15 ha.



Source: authors' elaboration.

Fig. 2 Dendrogram - five clusters of surveyed rural communes

Table 1

Centroids for features from C1 to C18, limits of ranges and medians

| Specification     | Cluster |       |      |      |      | Limits of ranges | Median |
|-------------------|---------|-------|------|------|------|------------------|--------|
|                   | 1       | 2     | 3    | 4    | 5    |                  |        |
| C 1 (thous. PLN)  | 4,6     | 15,8  | 8,3  | 4,7  | 4,9  | 4,6 – 15,8       | 10,2   |
| C 2 (thous. PLN)  | 53,7    | 555,6 | 204  | 16,7 | 40,8 | 16,7 – 555,6     | 286,2  |
| C 3 (%)           | 24      | 59    | 49   | 34   | 31   | 24 - 59          | 41,5   |
| C 4 (%)           | 3       | 9     | 6    | 4    | 4    | 3 - 9            | 6      |
| C 5 (%)           | 34      | 3     | 11   | 9    | 31   | 3 - 34           | 21,5   |
| C 6 (%)           | 34      | 23    | 29   | 37   | 28   | 23 - 37          | 30     |
| C 7 (%)           | 15      | 17    | 15   | 31   | 11   | 11 - 31          | 21     |
| C 8 (%)           | 6       | 6     | 6    | 16   | 5    | 5 - 16           | 10,5   |
| C 9 (%)           | 4       | 11    | 6    | 5    | 5    | 4 - 11           | 7,5    |
| C 10 (thous. PLN) | 749     | 1583  | 1407 | 1188 | 1225 | 749 - 1583       | 1166   |
| C 11 (%)          | 1       | 8     | 5    | 2    | 2    | 1 - 8            | 4,5    |
| C 12 (%)          | 8       | 6     | 10   | 8    | 8    | 6 - 10           | 8      |
| C 13 (%)          | 8       | 50    | 32   | 34   | 14   | 50 - 8           | 29     |
| C 14 (%)          | 16      | 49    | 40   | 64   | 36   | 16 - 64          | 40     |
| C 15 (%)          | 29      | 33    | 40   | 30   | 45   | 29 - 45          | 37     |
| C 16 (%)          | 25      | 11    | 13   | 5    | 14   | 5 - 25           | 15     |
| C 17 (%)          | 31      | 3     | 6    | 1    | 5    | 1 - 31           | 16     |
| C 18 (%)          | 18      | 1     | 2    | 0    | 3    | 0 - 18           | 9      |

Source: authors' elaboration.

Ward's cluster analysis produced 5 clusters on dissimilarity level 34, 4 (dashed line in Figure 2). In each cluster we indicated one commune (name in brackets), described by values of indexes closest to the mean value for the given group. In cluster 1, there are 11 communes (Kuczbork-Osada), cluster 2 includes 2 communes (Celestynów), in cluster 3 there are 7 communes (Kołbiel), cluster 4 contains 2 communes (Borkowice), and cluster 5 as much as 14 communes (Sobienie-Jeziory). Each specified cluster is characterised by centroids listed in Table 1.

**Cluster 1 – monofunctional communes** – includes all rural communes in so-kołowski and żuromiński powiats. They are characterised by the **lowest** (the bottom range limit) indices of due income tax paid by individual persons (C1) and legal entities (C2) as well as investment expenditures (C10), the lowest percentage of population living on full time job (C3) and on their own business (C4), the lowest percentage of university and post-secondary school graduates (C9), the lowest percentage of farms running only non-agricultural activity (C11) and running no activity (C13). Such indices prove that the level of multifunctional development in listed communes is very low. Another feature of these areas is relatively low (approaching the bottom range limit and much lower than the median) per cent of the unemployed total (C7) and people unemployed for more than 13 months (C8). These communes are characterised by **the following highest** indices (the upper range limit): per cent of inhabitants living mainly on their own farms (C5) and living on retirement pensions and pensions (C6), the highest share of farms running solely agricultural activity, the highest share of population working mainly on their large (C16) and very large (C17) farms, as well as the highest share of farms with more than 15 ha of arable land. Collection of all these features leads to the conclusion that cluster 1 includes strictly monofunctional (agricultural) communes, although the **structure of farms** in respect of size and arable land area C11-C18 **is the best**.

Results of the analysis confirm local authorities' opinions about functions of the communes, although the latter took into consideration also immeasurable factors such as forced return to agriculture in Lubowidz and Kuczbork-Osada, or accumulation of obstacles for agriculture in Sterdyn commune.

**Cluster 5 – monofunctional communes with problematic agriculture** – includes most communes in garwoliński and przysuski powiats. It has features most similar to cluster 1. However there are more people (6 per cent points) living on full time job, the lowest unemployment (C7) and long-term unemployment (C8) rates. In comparison to cluster 1, communes of cluster 5 had much higher index of investment expenditures (C10). These two clusters differ from each other in case of characteristics from C14 to C18, i.e.: **much lower share** of the largest farms (C18) and people working on large and very large farms, while share of people working on small (C14) and very small (C15) farms is bigger. So, the conclusion is, that communes **grouped in this cluster are strictly monofunctional**, but **the area structure of farms and the structure of population working on their own farms (considering the size) are very poor**. However, we should mention Klwów and Potworów communes, which produce vegetables. This kind of production does not demand large area on one hand, and on the other hand it increases significantly income level. Cluster 5 includes all communes defined by their authorities as agricultural, and not grouped in cluster 1. The possibility to discuss also other factors in the interview allowed to divide this group into subgroups: fruit-producing, vegetable producing, problematic agricultural, developing agricultural communes, etc.

**Cluster 4 – monofunctional communes, highly problematic because of rapidly diminishing double employment** – two communes in przysuski powiat: Borkowice i Gielniów, which have the **lowest** index of due income tax (C1) and (C2), the lowest percentage of population living on their own business and on their own farms. It is also characterised by a very unfavourable combination of such features as: the **highest** percentage of population living on retirement pensions and pensions, the highest unemployment rate and the highest percentage of the unemployed (more than 13 months without a job). All these show how difficult the situation in the labour market is. It results from diminishing double employment. If we add to it a complete lack of large farms (C18), the highest percentage of farmers working on the smallest (C14) and small (C15) farms as well as rather high percentage of farms that do not run any economic activity (C13), then we come to the conclusion that **in the aspect of multifunctional**

**development of rural areas these communes are highly problematic.** These are the communes where we come across the most unfavourable non-agricultural conditions and the most difficult situation in agriculture. These areas are directly influenced by processes of restructurisation and privatisation of state enterprises in Radom and Przysucha, which drastically reduced the long-lasting double employment in rural areas. In this case, the above mentioned processes did not make the rural population return to agriculture or set up their own small and medium businesses that could balance the unemployment. Instead, the unemployment and dependence on other permanent sources of income (e.g. pensions, retirement pensions) increased. Local authorities confirm this statistics and indicate several most difficult problems: unwillingness to return to agricultural production and passive waiting for the help of the state.

**Cluster 2 – multifunctional communes** – are Wiązowna and Celestynów in otwocki powiat. They are **totally different** from the above presented strongly monofunctional agricultural clusters. These multifunctional communes have the **highest** indexes of: non-agricultural income of the population (C1), budget revenues from income tax paid by legal entities (C2), investment expenditures, university and post-secondary graduates, population living on a full time job and on their own business in non-agricultural sectors. On the other hand we find here **the lowest** index of population living mainly on their own farms and people living on retirement pensions and pensions. Such situation proves that the role of agriculture as a source of income is diminishing here and that there is no need to ‘escape’ from the labour market (e.g. to retire). These are the most desirable features from the point of view of multifunctional development. In communes of cluster 2, there are not many large and very large farms (C18), consequently there are not many people declaring such farms as the main source of income. Farms are getting smaller because the inhabitants are not interested in agricultural production and the price of land in these communes is growing steadily because of a perfect location near Warsaw. Our analysis shows that this cluster contains the most multifunctionally advanced communes in the whole sample. The authorities claim that their communes are suburban units where the process of giving up agriculture is very advanced.

**Cluster 3 – tending to give up monofunctionality** – includes seven communes in three different poviats. Their mutual feature (except Garwolin and Parysów) is quite a good location near Warsaw and Żyrardów. In this cluster, values of nearly all discussed indexes are average, however, they are most similar to values of indexes calculated for cluster 2. It can be said that these communes are **close to the model of rural areas aiming at developing non-agricultural functions**. Many above discussed features indicate that there is a tendency to give up agricultural production as the sole or main source of income. If we compare cluster analysis results and opinions of local authorities, then we find out that cluster 3 is a kind of ‘conglomerate’: Radziejowice, Wiskitki and Kołbiel, described by their authorities as suburban or both suburban and recreation communes; Puszcza Mariańska and Garwolin which are still agricultural communes; Osieck – poor, neglected agriculture, double employment in the past (industry in Pilawa) and a strong tendency to give up agriculture and find a full time job at present. There is also Parysów commune in this group. Situated quite far from bigger cities and main roads, it is characterised by relatively high share of population living on full time jobs and a small share of people living on their farms. In 1996-2003 we observe here comparatively high level of C1 – similar to suburban communes. The authorities stress that a bigger non-agricultural labour market would cause an immediate reaction: next large group of people would give up farming. On the other hand there is a clear tendency to enlarge farms by purchase of land. Thus, we can assume that this commune has a considerable potential to develop non-agricultural functions.

As it is shown in the comparison of our research and IRWiR PAN studies (Rosner A., 2002) presented below, only Borkowice commune was indicated in both analysis as a problematic unit. Other communes were classified by researchers quite different.

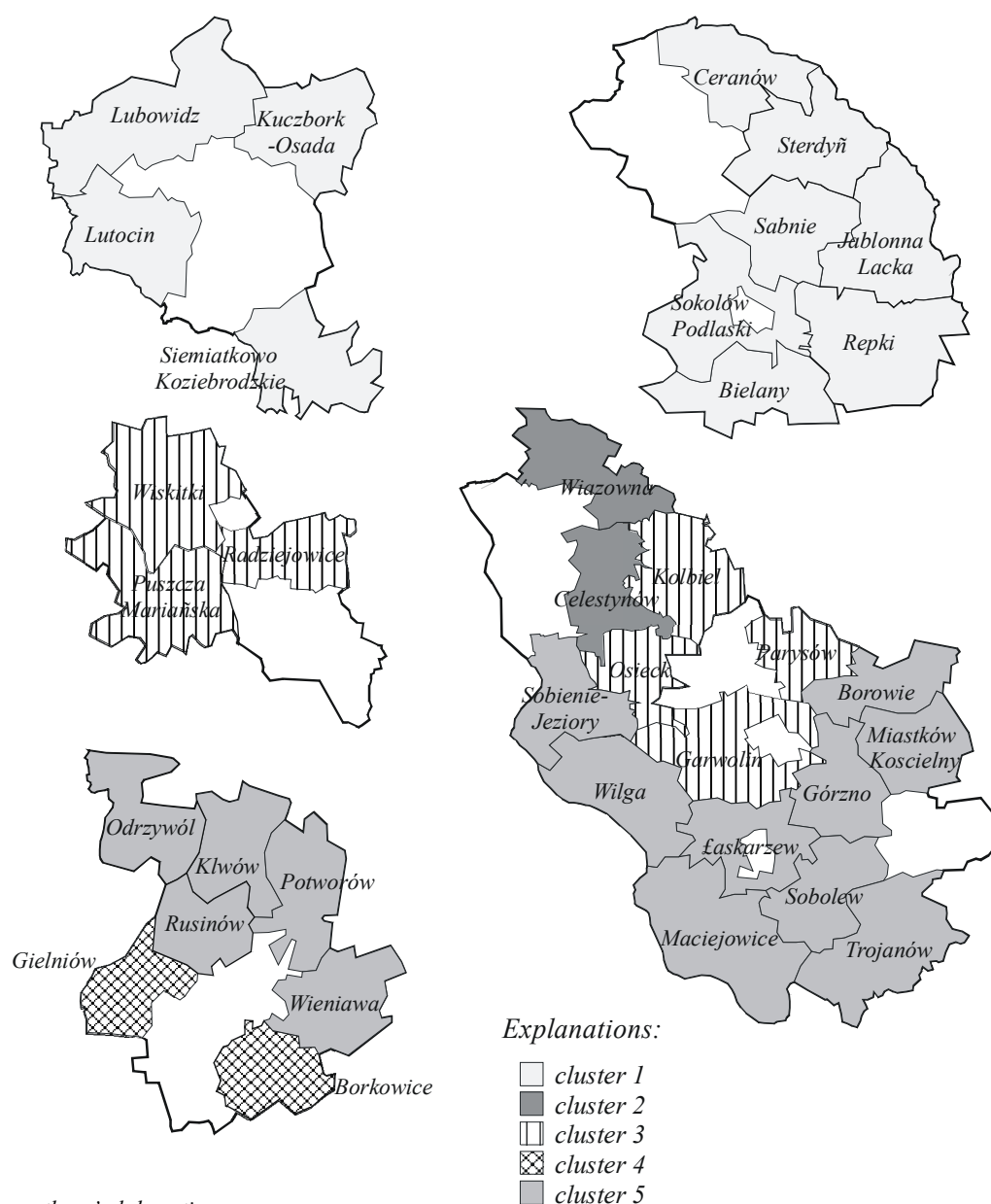
### **Typology of surveyed communes by criterion of their functions and geographic location**

Geographic location towards cities and main roads and railways (Fig. 1), allows to select, firstly, **a group of suburban location**, i.e. situated in the direct neighbourhood or not far from an urban

commune (but with good main roads and railway). Next, if we take into consideration other significant economic and social conditions, four apparently different sub-groups can be selected:

**1. sub-group of rural communes situated near Warsaw agglomeration** (Wiązowna) or not far from it, but with good roads and railway enabling everyday commuting to work (Celestynów); at the same time these communes are characterised by the highest values of described social and economic indexes and the most advanced process of multifunctional development (cluster 2);

**2. sub-group of rural communes situated near larger cities** (Skierniewice, Żyrardów, Mszczonów, Garwolin) **with good roads and railway connections to Warsaw**, relatively short distance from Warsaw enables everyday commuting to the capital; the sub-group includes these surveyed communes that in the whole process of multifunctional development are in the process of transition, it means that they are characterised by relatively good economic and social indexes and the results of the analysis placed them in cluster 3, similar to cluster 2;



Source: authors' elaboration.

Fig. 3 Location of surveyed communes grouped in five clusters in Mazovian Voivodship

**3. sub-group of communes situated near large cities far from Warsaw** (Sokołów Podlaski, Żuromin), included in cluster 1 – strong agricultural monofunctionality, and in some cases (e.g. Sokołów Podlaski, Lubowidz) even piling up problems resulting from intensive double employment in the past and high unemployment rate at present, both in the mentioned cities and in rural communes surrounding them;

**4. sub-group of rural communes situated near smaller cities far from Warsaw and Radom** (Przysucha, Łaskarzew), consists of communes grouped in cluster 4 (highly problematic) and some communes of monofunctional cluster 5.

**The second large group includes rural communes surrounded only by other rural communes** (Odrzywół, Lwów, Sobienie-Jeziory, Maciejowice, Jabłonna Lacka, Siemiątkowo Koziębrodzkie) or near urban communes with only small towns and without any main roads or railway (e.g. Rusinów, Potwo-rów). Previous analysis showed that these communes are grouped in clusters 1 and 5, which are monofunctional.

## Conclusions

All the above presented three methods of defining types of rural communes enabled us to show different types of communes in the survey. Although they do not make a full typology of such territorial units in Poland during transition, they indicate what processes and changes take place in rural communes and what character of these communes they result in.

Defining types of rural communes and the stage of their multifunctional development should be an introduction to elaborate strategies of multifunctional development for such units. Such typology also seems to be indispensable for increasing effectiveness of local authorities' decisions in this field.

Defining types of rural communes and their characteristics is also necessary to take accurate decisions on social and economic development both on regional NUTS IV and macro-regional NUTS III levels, because it illustrates differentiation of spatial structure in this aspect.

Typology of rural communes, presented above, can be used both for R&D and practical cognitive and decision making processes.

| Type of commune: |                                                                                                                                                                                                                    |                                                              |                                 |                                                      |                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------|------------------------------------------------------|----------------|
| multifunctional  | ---                                                                                                                                                                                                                | ---                                                          | ---                             | Wiązowna,<br>Celestynów                              |                |
| transitory stage | ---                                                                                                                                                                                                                | ---                                                          | Parysów,<br>Osieck,<br>Garwolin | Wiskitki,<br>Radziejowice,<br>Puszcza M.,<br>Kołbiel |                |
| monofunctional   | Lubowidz, Lutocin, Siemiątkowo K., Kuczbork-O., Ceranów, Sterdyń, Sabnie, Jabłonna L., Repki, Bielany, Odrzywół, Kłwów, Potworów, Rusinów, Sobienie-J., Wilga, Borowie, Miasków K., Sobolew, Trojanów, Maciejowice | Sokołów P., Łaskarzew, Górzno, Borkowice, Gielniów, Wieniawa | ---                             | ---                                                  |                |
|                  | long rural poor                                                                                                                                                                                                    | long also urban quite good                                   | medium also urban quite good    | very short also urban very good                      | 1.<br>2.<br>3. |

1. distance from Warsaw; 2. type of neighbouring communes; 3. roads and railways connecting surveyed communes to large cities

Source: authors' elaboration.

**Fig 4 Division of surveyed communes according to the criterion of their functions and location towards Warsaw and other urban communes**

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# Issues Regarding Cattle Carcasses Classification System in Latvia

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## Abstract

The paper presents the results of study on the development and implementation of cattle carcasses classification system, particularly payment system, in Latvia. The dynamics of cattle and beef production is described, thereto import and export balance and beef cattle breeds in Latvia have been characterized. Some advantages and disadvantages of the classification system, especially payments to farmers, are discussed and some proposals for the improvement of classification system of cattle carcasses, especially in payment system and training the classifiers and, are given.

**Key words:** cattle, beef, carcasses, classification, price.

## Introduction

The meat production int.al. beef, plays a significant role for the economy of the country and human nutrition. Latvia has all pre-conditions for the production of beef because there are big natural and cultured areas of grassland that can be used either as pastureland or as green mass for production of feed and the cattle are the most effective consumers of this type of feed. Consequently the sector has a tendency to develop.

The main aims for the beef production sector in Latvia are to achieve the self-provision and improvement of the quality of beef. By increasing the number of the beef breed cattle and the number of interbred with the milk breeds and by improving the quality of meat, the preconditions would appear for the beef sector for competition on the European market.

Ever since Latvia joined the EU in 2004, Latvian cattle carcasses have been classified according to the European SEUROP classification system. For pricing purposes all cattle carcasses are routinely classified in slaughterhouses. Carcasses of adult bovines shall be classified on the European Community scale for conformation and fatness.

According to the legislation of the EU and Latvia, only slaughterhouses handling more than 75 livestock units (1 livestock unit equals 1 cow) per week are obliged to classify the carcasses. Trade and payment of animals for slaughter can be based on more or less detailed systems, depending on class of cattle, type of categories, carcass weights, conformation and fatness and, in some countries, colour. Visual evaluations by the

use of classifiers or use of instruments are widely adapted in the EU.

The limited space available does not allow a presentation of all results in detail.

The following **materials** have been used for the study: the legislation of the EU and the Republic of Latvia; data of the Ministry of Agriculture of the Republic of Latvia; guidelines, methodology and data of the EU and international institutions; publications and data from the data bases of the Central Statistical Bureau of Latvia; publications of foreign and Latvian scientists; and information collected from producers and non-governmental organizations.

The following suitable qualitative and quantitative **methods** of economic investigation have been used for various solutions in the process of project elaboration: data grouping and comparing; methods of analysis and synthesis; logical and abstractive constructional methods; data interpolation; expert method, etc.

## Results

### Cattle and Beef Production in Latvia

In 2004 the share of cattle-breeding sector in the agricultural sector of Latvia was around 6.4%. The volume of beef production has decreased since the end of 1990's of the previous century, however, during the last five years it has become more or less stable (Fig. 1).

Beef production has been on the decline, and in the late 1990s it dropped below the domestic consumption levels. Currently the level of self-sufficiency in beef is only 78.8% in Latvia (Table 2). Since the number of slaughter animals contin-

ues to decrease, total beef production is expected to further decline in the coming years.

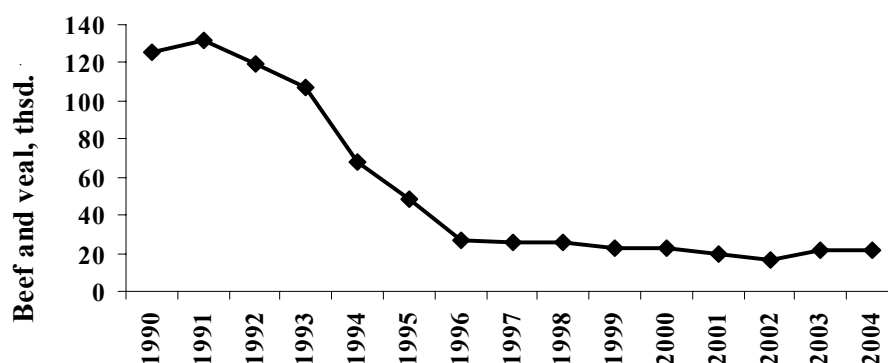
Cattle inventories have been steeply falling since 1990's, but they have become more stable during the last five years. The number of cattle has substantially decreased in the period from 1995 till 2001 due to a drastic reduction of the purchasing prices, but the number of cattle has become stable in the period of the last five years (Fig. 1). The number of cattle for beef production in Latvia has changed. The decreasing tendency observed from 1990 to 2001 has coincided with the descending tendency of all agricultural sectors.

Analyzing the statistic data it can be concluded that the production of beef is stable in the country, nevertheless, it has small production output. As the circle of the beef production is rather long, it is not possible to increase the production in a short period of time. 21.6 thousand tons of beef were produced in 2004 that is by 1.9 % more than in 2003. The consumption has increased by 0.3% in 2004 compared to 2003 and 29.5% of the total amount of the produced meat is beef (Ministry of Agriculture, the Republic of Latvia, 2005).

There are no essential changes observed in the last four years, regarding the number of cattle in small cattle farms which breed less than 3 animals per farm. Similar situation is observed in medium size farms that produce from 10 to 49 animals per farm. In turn, in large farms which produce more than 400 animals per farm, the opposite tendency was observed within the years from 2001 till 2004 where the total number of cattle in this farm group has increased from around 85 thousands in 2001 to 110 thousands in 2004 (Fig.1).

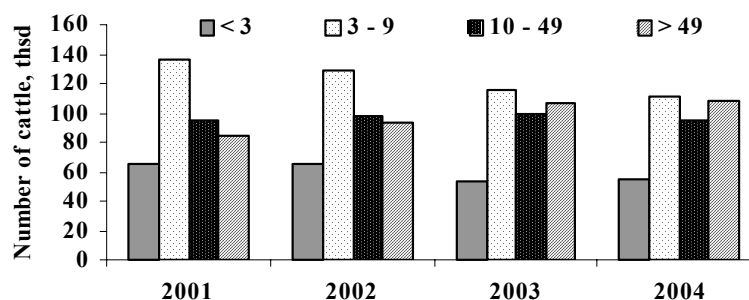
The majority of Latvian cattle, i.e., 40.2% was in cattle herds with less than 6 animals per herd in 2004 (Agricultural Date Centre, 2004).

It is necessary to point out that in very small farms (1 – 2 animals per farm) cattle is mainly raised for milk production, because beef cattle breeding is around 12% in this type of farms, the figure is smaller than the average country indicator of beef cattle (Table 1). However, Table 1 shows that specific weight of beef cattle amounts to 40% of the total number of



Source: own calculations based on data of the Central Statistical Bureau of Latvia.

Fig. 1 Beef and veal production (thsd t) in Latvia, 1990 - 2004



Source: own calculations based on data of the Central Statistical Bureau of Latvia.

Fig. 2 Number of cattle by groups of farms, 2001 – 2004

cattle in medium size farms (10-49 animals per farm), as well in larger farms, where the number of cattle exceeds 49 animals per farm, the specific number of beef cattle is higher and constitutes 42% of the total number of cattle.

Table 2 reports the figures of beef production, consumption, import and export. The beef balance of the last years shows that Latvia is beef importer, because the demand is greater than the production quantities. In 2004 imports of beef have risen by 2.6% in comparison with 2001, and the gain in weight has amounted to 21.6 thousand tons. Therefore, the production of beef has increased in 2003 and 2004, as a result import of beef has de-

creased and a slight tendency of beef export is observed (Table 2).

The majority (in terms of money) of beef is being imported from Lithuania (due to smaller costs), less from other countries (Fig. 3).

Figure 4 shows that five beef cattle breeds currently exist in Latvia: Aberdin Angus, Highland, Hereford, Limousin and Charolais, and the most widespread breeds are Charolais (38%) and Hereford (31%), as these breeds have well developed musculature. All the above-mentioned breeds have exceptional characteristics: conformation, good carcasses and muscular yield, potential for growth and feed conversation.

Table 1

### Specific weight of beef cattle by groups of farms in 2004

| Number of cattle per farm | Beef cattle, thsd | Total cattle, thsd | Specific weight of beef cattle, % |
|---------------------------|-------------------|--------------------|-----------------------------------|
| 1 - 2                     | 6 928             | 58 915             | 12%                               |
| 3 - 9                     | 38 034            | 109 733            | 35%                               |
| 10 - 49                   | 38 857            | 94 685             | 41%                               |
| > 49                      | 45 216            | 107 820            | 42%                               |
| Total                     | 129 035           | 371 153            | 35%                               |

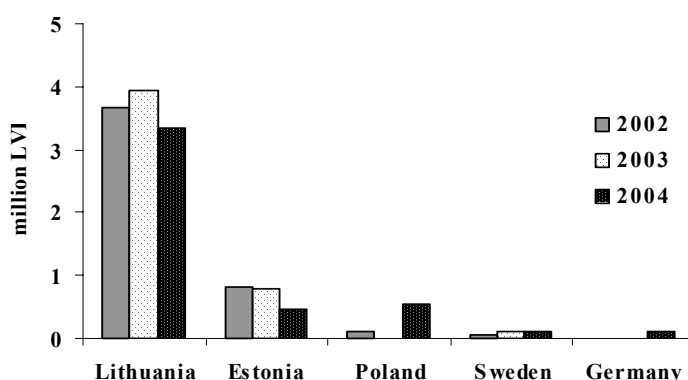
Source: own calculations based on data of the Central Statistical Bureau of Latvia.

Table 2

### Balance of beef in Latvia, 2001 - 2004

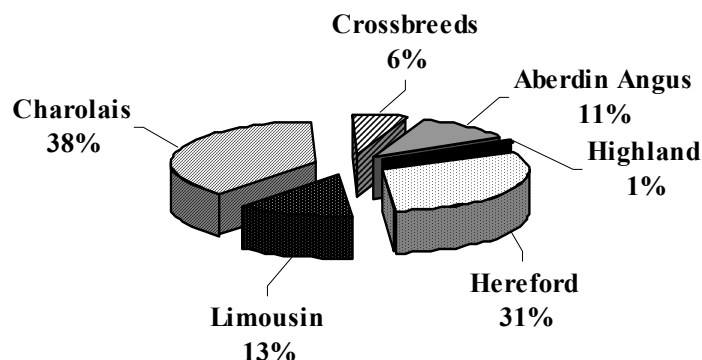
| Beef, thsd t | 2001 | 2002 | 2003 | 2004 |
|--------------|------|------|------|------|
| Production   | 19.0 | 16.0 | 21.2 | 21.6 |
| Consumption  | 24.5 | 23.3 | 27.3 | 27.4 |
| Import       | 6.9  | 7.1  | 7.5  | 6.3  |
| Export       | 0.4  | 0.5  | 0.7  | 0.7  |

Source: own calculations based on data of Rural Development Service.



Source: own calculations based on data of the Central Statistical Bureau of Latvia.

Fig. 3 Distribution of beef import value, million LVL, 2002 - 2004



Source: own calculations based on data of Agricultural Data Centre (2004).

Fig. 4 Distribution of beef cattle breeds in farms of Latvia, 2004

### Cattle Carcasses Classification

The cattle carcasses classification scheme is based on the legislation of the Republic of Latvia (the Cabinet Regulations No. 411 "On Requirements of Quality and Classification of Livestock and Procedure of Compliance of the Carcass to be Evaluated with the Requirements of Quality and Qualification") and the EU legislation (Regulation 1208/1981), which lay down the precise classification standards for carcasses and the checks required to ensure uniformity throughout each member state.

Cattle are classified by category and age according to the quality criteria conformation and fatness. The degree of fattening is indicated by a number: 1 – low; 2 – light; 3 – moderate; 4 – fat; 5 – very fat.

Conformation is indicated by the letters S, E, U, R, O, P: S – superior; E – excellent; U – very good; R – good; O – moderate and P – poor.

The beef carcasses classification has three main purposes:

- The grade given to a carcass and its weight determines the estimated yield of meat and this is the basis for a flat rate paid to the farmer.
- Accurate assessment of the yield and quality of meat from a carcass allows processors to maximize efficiency by having distinct work areas for the different classes and therefore reducing time and cost.
- Price reporting to the EU and standardized prices according to classification enable comparisons to be made between the different EU countries.

Since the previous scheme depends on human judgement, it is criticised by some for being sub-

jective and inconsistent. The farmers in the EU countries have no confidence in the current system of grading by eye. This lack of confidence makes it difficult to agree on quality-based payment schedules that reflect the true value of carcasses to the industry (M. G. Keane, 1999).

At present in Latvia carcasses classification is performed by specially trained individuals by eye and monitored by the slaughterhouses classifiers.

In the EU (Regulation 1215/2003) and the EU countries the legislation allows classification to be carried out electronically. Paul Allen et al. (2001) described three beef carcass classification systems where Video Image Analysis (VIA) technology tests were used. The VIA systems are BCC2, manufactured by SFK Technology, Denmark, VBS2000, manufactured by E+V, Germany, and VIA scan, manufactured by Meat and Livestock Australia. Machines that can automatically classify carcasses would be more acceptable as the basis of quality-based payments. Such machines should give confidence to all parties provided they can be shown to be at least as accurate as the present system.

The EC encourages this move, as it should improve consistency and price transparency in carcass classification. The new EU rules safeguard the investments made by cattle abattoirs in classification technology, because the equipment now can be approved and used officially by slaughterhouses as payment to the suppliers. In France there were more than 25 machines covering 50% of the slaughters in 2004. In Ireland the beef carcass classification was transferred from a government financed system to a Denmark model, where classifiers are employed by slaughterhouses.

The below-mentioned organisations are an example of several different models used in the EC:

- government controlled, and implemented by government staff - Irish model;
- government controlled at top level, but implemented by private companies - German model;
- government controlled frequently, but implemented by slaughterhouses staff – the Scandinavian model.

At present the Scandinavian model is used in Latvia.

The main elements of the cattle classification or grading are weight, conformation and fatness. Meat buyers use the language of classification to specify their requirements. Within any purchasing scheme, classification is linked to price and it generally provides the basis for the transaction between the farmer and slaughterhouse.

It is in the producer's interest to know the target areas within the classification scheme which attract premium payments. Conformation of carcass describes carcass shape in terms of convex/concave profiles and indicates the amount of flesh or muscle proportion to bones.

Varied price of purchase cattle must reflect the differences in expected yield of saleable meat. Premiums are paid for those carcasses falling within the target area of the classification indices. The differences between abutting conformation classes are usually greater than those between abutting fatness classes.

The carcass classification is done within two hours of stunning to prevent drip loss from affecting measurement of carcass weight. After slaughter, the head, hide and intestines are removed

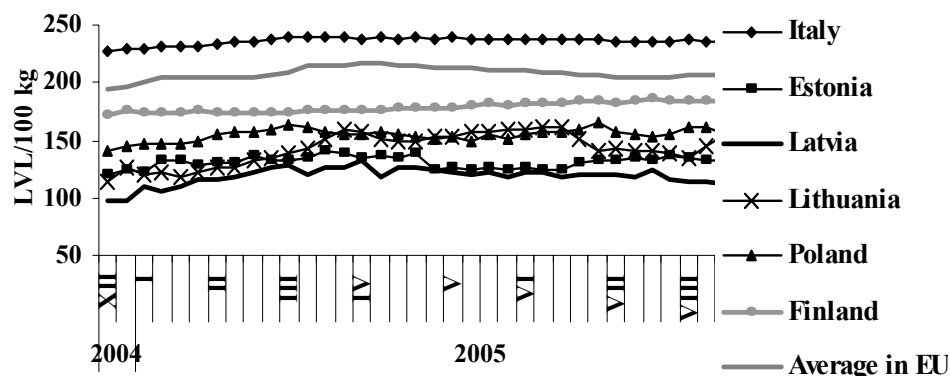
from carcasses. The cleaned carcasses are then halved, and a trained classifier weighs and evaluates them with respect to fatness and conformation. The official carcass weight is the measured weight of the hot carcass minus a 2% hot carcass deduction.

There are officially five fatness and six conformation grades in the SEUROP system, but some countries, for instance, Finland (A.E. Liinamo, 2000) divide grades in subclasses if needed. In Finland, fatness is classified according to the original SEUROP grades, but conformation is classified in 11 grades. No grade S exists because there are no double-muscled breeds in Finland. The grades R, O and P are divided into three subclasses, each of which is marked with + and - symbols; e.g., R+, R and R-.

### Payment System and Prices

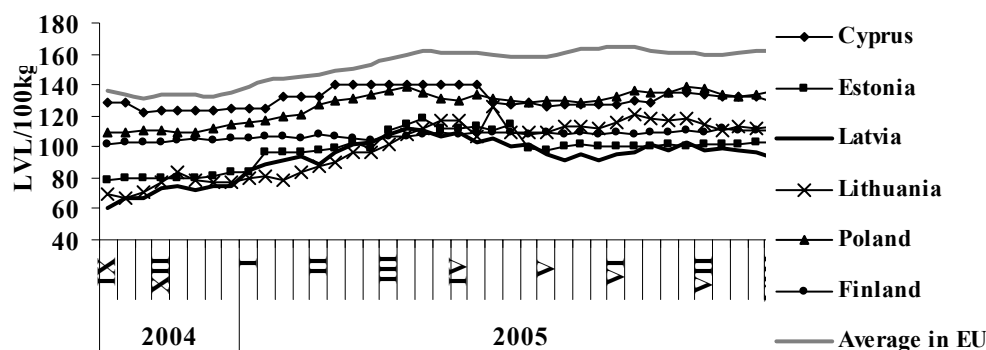
Payment is made on the basis of the quality grade. The slaughterhouses are permitted to introduce price differences between the carcass grade, type and weight. To promote uniformity, the recommended payment system has been drawn up in most of the EU countries. Slaughterhouses which use this system base their payments to pig farmers accordingly.

In Denmark (N. T. Madsen, 2001) it is common for the slaughterhouses to publish weekly how their present payment grid relates to the different classification levels. For industry use and the EC price reporting the slaughterhouses report the classification and the paid price to the farmer for each animal on a weekly basis. Data are transferred via databases from slaughter plants to the meat board and then to the EC.



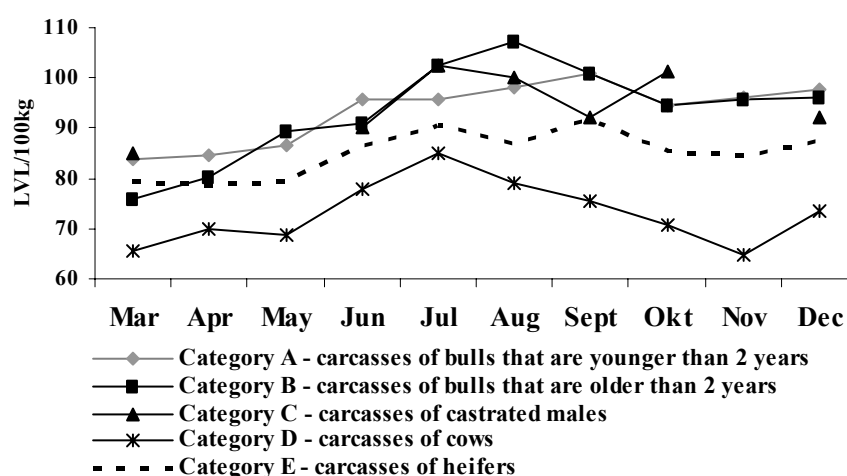
Source: own calculations based on the EC information.

Fig. 5 Purchasing prices of beef carcasses of category A (carcasses of bulls) in the EU countries, LVL/100 kg, 2004–2005



Source: own calculations based on the EC information.

Fig. 6 Purchasing prices of cattle carcasses of category D (carcasses of cows) in the EU countries, LVL/100 kg, 2004 - 2005



Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Fig. 7 Average purchasing prices of cattle carcasses in Latvia, LVL/100 kg, 2004 - 2005

These price comparisons are also a base for deciding on the EU intervention prices, which sometimes are an important regulator of the EC beef market.

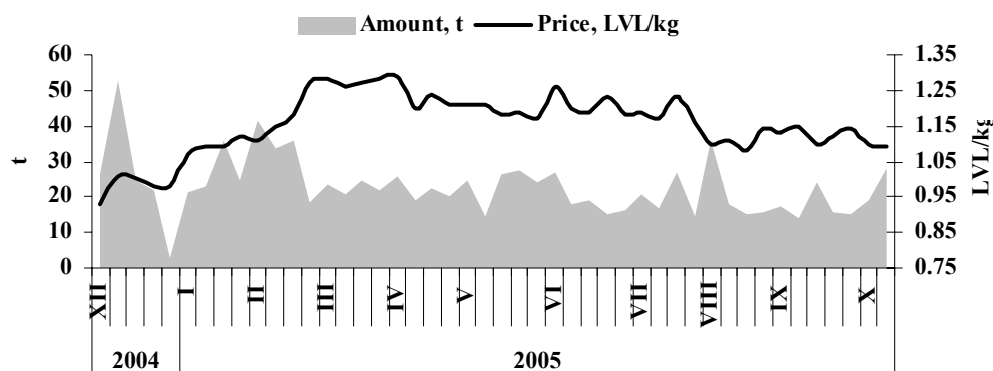
Figure 5 shows the result of analyses and comparison of the purchasing prices for category A (young bulls) of beef carcasses in some EU countries and the average EU price. Low prices have been observed in the Baltic states, and particularly, the lowest prices have been recognized on all categories of cattle carcasses in Latvia. For instance in Italy, the price of 100 kg of A category beef is LVL 28, which is higher than the EU average price (207.9 LVL/100 kg), while the lowest price 117.93 LVL/100 kg beef has been observed in Latvia.

Figure 6 shows the results of the comparison with average purchasing price of beef car-

casses of category D (cows) between the EU countries.

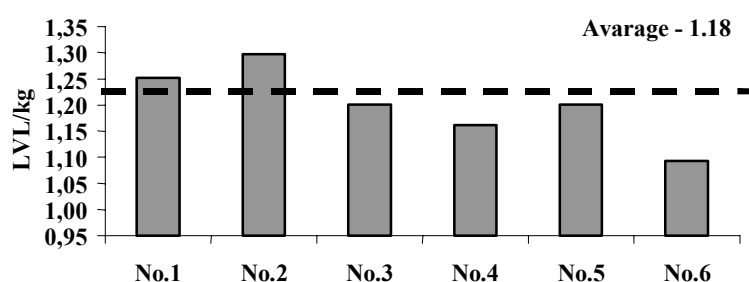
Greater monthly price fluctuations are observed in the Baltic states and Poland, particularly in Latvia, than in other EU countries, for instance Finland and Italy (Fig. 5, 6, 7). The prices of carcasses do not depend on slaughtering volumes (Fig. 8) and thus distort Latvian beef market.

The results of studies of cattle/beef slaughtering volumes in Latvia show that the biggest amounts of obtained category A (young bulls) carcasses were in the winter season – December and January, but the lowest – in September, however low prices were marked in December and August (Fig. 8). Similar situation has been observed for other cattle carcasses categories.



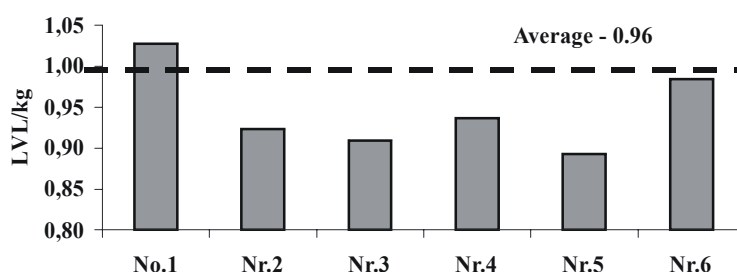
Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Fig. 8 Average purchasing prices (LVL/kg) and slaughtered amount (t) of cattle carcasses of category A in Latvia, 2004 – 2005



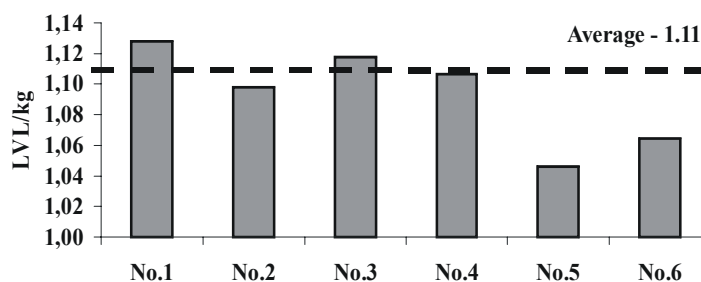
Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Fig. 9 Average purchasing prices of category A cattle carcasses in Latvian slaughterhouses, LVL/kg without VAT, 2005



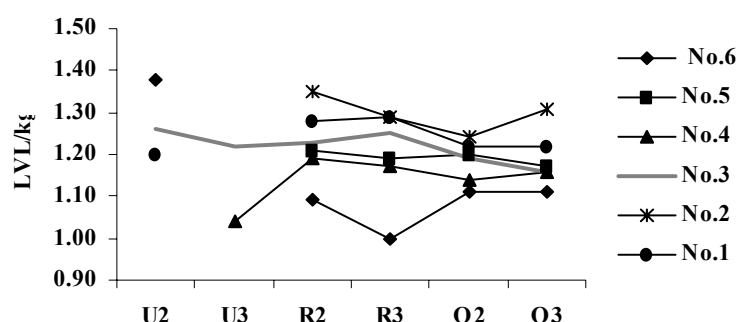
Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Fig. 10 Average purchasing prices of cattle carcasses of category D in Latvian slaughterhouses, LVL/kg without VAT, 2005



Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Fig. 11 Average purchasing prices of cattle carcasses of category E in Latvian slaughterhouses, LVL/100 kg without VAT, 2005



Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Fig. 12 Purchasing prices of cattle carcasses of category A (carcasses of young bulls) in Latvian slaughterhouses, LVL/kg without VAT, 2005

### Comparison of cattle carcasses purchasing prices in slaughterhouses of Latvia

The representation of carcasses for price analysis is 40 – 60% from all cattle which had been slaughtered on each slaughterhouse. The total number of analyzed carcasses is 8 397.

The average price of category A carcasses was 1.18 LVL/kg. Comparing the purchasing price among six Latvian slaughterhouses, it was noted that the highest price was paid by the slaughterhouse No 1 and No 2, but the lowest price by the slaughterhouse No 6.

The price of D category cattle carcasses was lower than the price of A and E category. A similar trend has been observed in other EU countries, for instance, in Slovenia. In 2005 the average price for cattle carcasses of category E was 1.11 LVL/kg.

Analyzing the purchasing prices among slaughterhouses, it can be seen that the highest prices are paid by the slaughterhouses No. 1 and No. 3, but the lowest – by the slaughterhouses No. 5 and No. 6 (Fig. 11). After the analysis of the purchasing prices of cattle carcasses in Latvian slaughterhouses, it is concluded that in general the payment system is not correct and fair (Fig. 12).

The assumed average carcass weight has been used to compare the differences among payments for the purchased cattle by all six slaughterhouses and the income per one cattle unit received by a farmer (Table 3). The table shows the results of calculation and differences between the highest and the lowest prices for equal grade of carcass.

The differences vary among slaughterhouses from 7.1% to 16.2% thus forming a wide gap, as, for instance, in Finland and the UK, the dif-

ference is allowed to equal to 1%. In terms of money the cut-off is around LVL 52.5 per delivered animal. Besides the cut-off of payment among different slaughterhouses for grade O (Table 4) reaches 17% or LVL 48.6 in terms of money.

### Conclusions and proposals

1. The production of cattle has shown tendencies of stabilization and possibilities for the sector of beef to grow due to the pre conditions for the production of beef..

2. The classification of cattle carcasses, evaluation of conformation and fatness scores are subjective measures that depend on the competence of the classifier. It is necessary to improve qualification and skills of classifiers ensuring better training process in Latvia.

3. The comparison of the prices of cattle carcasses show that the lowest prices on the EU market are in the Baltic states, particularly in Latvia, where the lowest prices on all categories of cattle carcasses, and high monthly fluctuations have been observed.

4. The analysis of the purchasing prices of cattle carcasses in Latvian slaughterhouses leads to the conclusion that in general the payment system is not correct and fair, because some slaughterhouses due to low skills of a classifier or low base price pay less for the highest quality carcasses.

5. The prices for the same quality carcass vary extremely among the slaughterhouses ranging from 7.1% to 16.2%, in terms of money the cut-off amounts to LVL 52.5 per delivered animal, for the same class the difference is 17% or LVL 48.6 per animal.

Table 3  
Highest and lowest purchasing prices of the medium quality cattle carcasses in Latvian slaughterhouses, 2005

| Categories of cattle carcasses                       | Average carcass weight, kg | Lowest purchasing prices |                |                                 | Highest purchasing prices |                |                                 | Difference in payment |      |
|------------------------------------------------------|----------------------------|--------------------------|----------------|---------------------------------|---------------------------|----------------|---------------------------------|-----------------------|------|
|                                                      |                            | Price, LVL/kg            | Slaughterhouse | Payment for cattle carcass, LVL | Price, LVL/kg             | Slaughterhouse | Payment for cattle carcass, LVL | LVL                   | %    |
| Category A – carcasses of bulls younger than 2 years | 250.0                      | 1.09                     | No. 6          | 272.5                           | 1.3                       | No. 2          | 325.0                           | 52.5                  | 16.2 |
| Category E – carcasses of heifers                    | 200.0                      | 1.05                     | No. 5          | 210.0                           | 1.13                      | No. 1          | 226.0                           | 16.0                  | 7.1  |
| Category D – carcasses of cows                       | 270.0                      | 0.89                     | No. 5          | 240.3                           | 1.06                      | No. 1          | 286.2                           | 45.9                  | 16.0 |

Source: own calculations based on unpublished information received from Latvian slaughterhouses.

Table 4  
Highest and lowest purchasing prices of cattle carcasses with different quality in Latvian slaughterhouses. 2005

| Categories of cattle carcasses                                | Class | Average carcass weight, kg | Lowest purchasing prices |                |                                 | Highest purchasing prices |                |                          | Difference in payment |      |
|---------------------------------------------------------------|-------|----------------------------|--------------------------|----------------|---------------------------------|---------------------------|----------------|--------------------------|-----------------------|------|
|                                                               |       |                            | Price, LVL/kg            | Slaughterhouse | Payment for cattle carcass, LVL | Price, LVL/kg             | Slaughterhouse | Payment for carcass, LVL | LVL                   | %    |
| Category A – carcasses of bulls that are younger than 2 years | O2    | 250.0                      | 1.14                     | No. 4          | 285.0                           | 1.24                      | No. 2          | 310.0                    | 25.0                  | 8.1  |
| Category E – carcasses of heifers                             | O4    | 200.0                      | 0.99                     | No. 6          | 198.0                           | 1.12                      | No. 2          | 224.0                    | 26.0                  | 11.6 |
| Category D – carcasses of cows                                | O3    | 270.0                      | 0.88                     | No. 5          | 237.6                           | 1.06                      | No. 1          | 286.2                    | 48.6                  | 17.0 |

Source: own calculations based on unpublished information received from Latvian slaughterhouses.

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## Kopsavilkums

### *Liellopu liemeņu klasifikācijas problēmas Latvijā*

*Rakstā aplūkoti pētījuma rezultāti par liellopu liemeņu klasifikācijas ieviešanu un problēmām, kas būtu jānovērš, lai sistēma darbotos atbilstoši ES prasībām. Sniegts ieskats liellopu nozares, tai skaitā, liellopu gaļas ražošanas attīstībai un tās iespējām, liellopu gaļas bilancei, gaļas liellopu attīstībai, ražošanas koncentrācijai, kā arī gaļas lopu šķirņu attīstībai. Iztirzājot ES liemeņu klasifikāciju un tās ieviešanu, īpaša vērība veltīta samaksa principiem un cenu analīzei, gan starp ES valstīm, kur konstatēts, ka Latvijā 2004. un 2005. gadā bija viszemākās cenas un vislielākās cenu svārstības pa mēnešiem, gan starp atsevišķām Latvijas kautuvēm, kuras pakļautas prasībām par obligātu klasifikācijas veikšanu. Salīdzinot dažādo kautuvju iepirkuma cenas, konstatēts, ka dažās kautuvēs par zemākas kvalitātes liemeņiem maksā augstāku iepirkuma cenu, kas norāda, ka klasifikatoriem nav pienācīgu prasmju. Vienādas kvalitātes liemeņiem iepirkuma cena starp kautuvēm var atšķirties par 7.1% līdz 16.2%, vai naudas izteiksmē 52.5 LVL par vienu piegādāto vidējo liemeni, kā arī vienas klases (O) robežās cenas starp kautuvēm atšķiras par 17% vai 48.6 LVL liemenim.*

## **Lauksaimniecības statūtsabiedrību asociācijas dalīborganizāciju attīstība** *Development of the Agricultural Statute Companies Memberorganizations*

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### **Abstract**

In a paper the results of researches are expounded for Latvian SAS participant organisation and it's development. Found out, that the greatest, strong and prestige agriculture company was united in this association, but the representative office of regions in the association is sharply different.

In these economies development is characterized by a few indicators: - the productivity of plants cultural and productivity of cows rises, continually the productivity of work rises and profits are multiplied.

Research covers eight - of nine years period (1997. - 2005.).

**Atslēgas vārdi:** lauksaimniecība, statūtsabiedrības, asociācija, attīstība.

**Key words:** agriculture, enterprisecompany, association, development.

### **Ievads**

#### **Introduction**

Agrārā reforma Austrumeiropas, Viduseiropas un Centrāleiropas valstīs risinājās pēc dažādiem, pat krasi atšķirīgiem politiskiem scenārijiem, bet visus tos var apvienot divās lielās grupās. Vairumā valstu dominēja ekonomiskais scenārijs. Šajās valstīs veica zemes īpašumu restitūciju, nesagraujot, saglabājot izveidoto lauksaimniecības ražošanas bāzi, produkcijas pirmapstrādes objektus un citas vērtības, bet ražošanas turpināšanai veica materiālās bāzes rekonstrukciju, modernizāciju.

Savukārt, dažās valstīs pārsvaru guva politiskais, idejiski emocionālais scenārijs, kura mērķis bija noārdīt visu, kas bija radīts 50 t.s. sociālistiskās saimniekošanas gados un ne tikai atjaunot visus zemes īpašumus, bet arī pirmskara gadu saimniekošanas formas.

Latvijā dominēja otrais scenārijs, bet reformas realizācija tomēr bija krasi atšķirīga pagastos un pat rajonos.

Šīs atšķirības noteica autoritatīvas personības, kuras, nesavtīgi strādājot, bija iemantojušas cilvēku uzticību. Tur saglabājās lielākā vai liela daļa kopsaimniecību, saglabājās fermas, lopi,

kaltes, klētis, darbnīcas, mašīnas, iekārtas, kā arī darbu turpināja speciālisti un saimniecību ražošanas apakšvienību vadītāji. Šāda reformas scenārija spilgti piemēri ir– agrofirma „Tērvete”, Pampāļi, Naukšēni, Palsa, Mārupe, Palsmane, Dzimentene, Turība u.t.t.

Sākotnēji izveidojās liels skaits – aptuveni 600 statūtsabiedrību, galvenokārt paju un kooperatīvās sabiedrības, kā arī SIA, bet nostabilizējās un attīstījās tikai tās, kurām bija talantīgi, godīgi vadītāji. Tās izveidoja savu – sabiedrisko organizāciju statūtsabiedrību asociāciju. Jāpiezīmē, ka dažādu ekonomisko sarežģītumu dēļ (nenodrošināta cenu paritāte), kā arī lauksaimniecības uzņēmumu privatizācijas likuma nepilnību dēļ, dažu gadu laikā vairums jaunizveidoto statūtsabiedrību jau bija likvidējušās un deviņdesmito gadu vidū darbojās aptuveni tikai 90 sabiedrības.

Jaunizveidoto asociāciju sākotnēji izveidoja 54 statūtsabiedrību pārstāvji, 1997.-1998.gg. laikā LSA biedru skaits sasniedza 80.

Šajā rakstā izklāstīta **pētījuma mērķis** bija izanalizēt Latvijas lauksaimniecības statūtsabiedrību asociācijas dalīborganizāciju darbības rezultātus un izvērtēt to attīstības iespējas.

Darba mērķim pakļauti šādi **pētījuma uzdevumi**:

- IZANALIZĒT asociācijas dalīborganizāciju sastāvu, tā izmaiņu tendences;
- IZPĒTĪT ražošanas attīstību asociācijas statūtsabiedrībās;
- IZVĒRTĒT to attīstības iespējas.

#### **Materiāli un metodes**

##### **Materials and methods**

Pētījuma uzdevumu risināšanai izmantota asociācijas datu bāzē uzkrātā informācija par dalīborganizāciju sastāvu un darbību, statistikas dati, likumi un normatīvie akti, zinātniskā literatūra un autoru uzkrātā pieredze.

Pielietotas grupēšanas, laikrindu dinamikas analīzes, statistikas analīzes, loģisko konstrukciju un ekspertvērtējumu metodes.

#### **Rezultāti un diskusija**

##### **Results and discussion**

#### **1. Statūtsabiedrību asociācijas sastāvs**

##### **Composition of L SAS**

Asociācijas dalīborganizāciju dislokatīvie dati sakārtoti 1.tabulā.

No 1. tabulas datiem un aprēķiniem izriet vairāki secinājumi vai vērtējumi:

- LSA dalīborganizāciju skaits ir mainīgs un šīs izmaiņas rada vairāki faktori un procesi:

- saimniecību likvidācija sakarā ar bezcerīgo ekonomisko situāciju. LSA darbības laikā lēmumus par likvidāciju pieņēma daudzas savulaik spēcīgas saimniecības (SIA "Bulduri", paju sabiedrība "Cesvaine", "Grieze", "Nīgrande", "Nautrēni", "Latgale", "Sala" "Šedere", "Krimūnas" u.c.

- dažām statūtsabiedrībām mainās īpašnieku sastāvs un jaunajiem īpašniekiem bieži ir citas intereses;

- atsevišķām statūtsabiedrībām nav bijusi veiksmīga vadība;

- asociācijā iestājas jaunas dalīborganizācijas;

- Dalīborganizāciju skaits ir ļoti atšķirīgs reģionos un rajonos:

- visvairāk to ir galvenajos lauksaimnieciskās ražošanas rajonos – Zemgales aglomerācijā (Tukuma, Saldus,

1. tabula / Table 1

#### **Latvijas statūtsabiedrību asociācijas dalīborganizāciju skaits Latvijas reģionos un atsevišķos rajonos 1997.-2005.gadu periodā**

##### **Latvian SAS participant organisation figures in Latvian regions and separate districts**

| Reģioni<br><i>Regions</i> | Rajoni<br>reģionos<br><i>Districts</i> | Dalīborganizāciju skaits<br><i>Member organizations figures</i> |       |       | Izvietojums %<br>2005.gadā<br><i>Distribution, %</i> |
|---------------------------|----------------------------------------|-----------------------------------------------------------------|-------|-------|------------------------------------------------------|
|                           |                                        | 1997.                                                           | 1999. | 2005. |                                                      |
| Vidzeme                   | Kopā                                   | 23                                                              | 27    | 22    | 36.1                                                 |
| t.sk.                     | Ogres                                  | 3                                                               | 5     | 4     | 6.5                                                  |
|                           | Valkas                                 | 3                                                               | 4     | 4     | 6.5                                                  |
|                           | Rīgas                                  | 5                                                               | 5     | 3     | 4.9                                                  |
|                           | Valmieras                              | 3                                                               | 5     | 5     | 8.2                                                  |
| Kurzeme                   | Kopā                                   | 18                                                              | 23    | 20    | 32.8                                                 |
| t.sk.                     | Kuldīgas                               | 2                                                               | 5     | 4     | 6.5                                                  |
|                           | Saldus                                 | 5                                                               | 4     | 4     | 6.5                                                  |
|                           | Tukuma                                 | 9                                                               | 12    | 10    | 16.4                                                 |
| Zemgale                   | Kopā                                   | 13                                                              | 21    | 16    | 26.2                                                 |
| t.sk.                     | Bauskas                                | 1                                                               | 4     | 5     | 8.2                                                  |
|                           | Dobeles                                | 5                                                               | 8     | 4     | 6.5                                                  |
|                           | Jelgavas                               | 3                                                               | 4     | 4     | 6.5                                                  |
| Latgale                   | Kopā                                   | 4                                                               | 6     | 3     | 4.9                                                  |
| t.sk.                     | Preiļu                                 | 2                                                               | 2     | 1     | 1.6                                                  |
|                           | Rēzeknes                               | 1                                                               | 2     | 2     | 3.3                                                  |
| Kopā LR                   | Visos                                  | 58                                                              | 77    | 61    | 100.0                                                |

**Avots:** statūtsabiedrību asociācijas dati un autoru aprēķini.

Bauskas, Dobeles, Jelgavas rajonos) un Ziemeļvidzemē – Valmieras un Valkas rajonos;

■ Pavisam maz to ir Latgales un Latvijas Ziemeļaustrumu rajonos.

LSA darbojas gan akciju sabiedrības un sabiedrības ar ierobežotu atbildību, gan arī 8 kooperatīvās sabiedrības, kuras ir visai dažādas: - trīs ir pakalpojumu sabiedrības, kurām zemes nav vai ir tikai daži hektāri, bet piecas ir lauksaimnieciskās ražošanas kooperatīvās sabiedrības, kuras apsaimnieko 227 – 841 ha zemes.

Lauksaimniecības statūtsabiedrību asociācijā apvienojušās lielākās, prestižākās, spēcīgākās statūtsabiedrības, kas raksturojas ar 2.tabulā sakārtotiem datiem un aprēķiniem.

Interpretējot 2.tabulas datus veidojas sekojoši secinājumi:

■ Bauskas rajona LSA dalīborganizācijas apsaimnieko 81.4% no visu rajona lauksaimniecības statūtsabiedrību lauksaimniecības zemes kopplatības;

■ trīs ceturtdaļas un vairāk kā divas trešdaļas no visu statūtsabiedrību LIZ apsaimnieko LSA dalīborganizācijas arī Valkas un Saldus rajonos;

■ gandrīz pusi no visu Latvijas statūtsabiedrību LIZ platības apsaimnieko LSA dalīborganizācijas;

■ LSA dalīborganizāciju vidējā LIZ platība

Zemgales rajonos ir 3 – 5 reizes lielāka nekā pārējo statūtsabiedrību vidējā platība;

■ liels īpatsvars dalīborganizācijām arī Ziemeļvidzemes reģionā, Tukuma un Saldus rajonos.

## 2. Lauksaimniecības statūtsabiedrību asociācijas dalīborganizāciju specializācijas attīstība

### *LASAS MO development of farms specialisation*

Saimniecību ražošanas specializācijas attīstību var vērtēt pēc vairākiem rādītājiem vai kritērijiem. LSA dalīborganizācijas pārsvarā ir daudznozaru saimniecības, daudzas no tām specializējas tikai augkopībā, atsevišķas no tām tikai cūkkopībā. Tāpēc par problēmu var uzskatīt piena lopkopības attīstību, kas arī noteica kritēriju analīzi, kas sakārtota 3. tabulā.

Kā redzams 3. tabulā, piena ražošanā specializējušos saimniecību skaits ir stabils, bet tas mainīgs analizēto saimniecību grupās:

■ sākotnēji ievērojami samazinājies lielāko (> 500 govīs) fermu skaits un īpatsvars; pēdējos gados (2004.-2005.gg.) gadā parādās jauna pozitīva tendence – govju skaita palielināšanās ko var izskaidrot ar piena iepirkuma cenu kāpumu;

■ palielinās mazo (< 200 govīs) fermu skaits un īpatsvars, bet arī tendence tagadējos apstākļos var mainīties;

2. tabula / Table 2

### Lauksaimniecībā izmantojamās zemes vidējā platība rajonu statūtsabiedrībās *Usage of the average agricultural land on districts in MO*

| Rajoni ar LSA dalīborganizāciju lielāko skaitu 2005.g.<br><i>Districts with biggest number of LASAS members' organizations</i> | LIZ vidējā platība, ha<br><i>AAL area (ha)</i> |                                                         | LIZ kopplatība statūtsabiedrībās<br><i>AAL in all stat.societies</i> |                                                  | LSA dalīborganizāciju LIZ īpatsvars visu statūtsabiedrību LIZ kopplatībā, %<br><i>LASAS AAL proportion in all AAL area</i> |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                | LSA dalīb-Organizācijās<br><i>In LASAS</i>     | Visās statūtsabiedrībās<br><i>In all stat.societies</i> | LSA dalīb-organizācijās, ha<br><i>In LASAS (ha)</i>                  | Visās statūtsabiedrībās, ha<br><i>in all ASS</i> |                                                                                                                            |
| Bauskas                                                                                                                        | 2785                                           | 507                                                     | 11140                                                                | 13689                                            | 81.4                                                                                                                       |
| Dobeles                                                                                                                        | 2590                                           | 526                                                     | 10361                                                                | 23144                                            | 44.7                                                                                                                       |
| Jelgavas                                                                                                                       | 2070                                           | 537                                                     | 6212                                                                 | 15573                                            | 39.9                                                                                                                       |
| Saldus                                                                                                                         | 2042                                           | 669                                                     | 8168                                                                 | 12042                                            | 67.8                                                                                                                       |
| Tukuma                                                                                                                         | 1267                                           | 569                                                     | 10134                                                                | 18777                                            | 54.0                                                                                                                       |
| Valkas                                                                                                                         | 1623                                           | 383                                                     | 6492                                                                 | 8809                                             | 73.7                                                                                                                       |
| Valmieras                                                                                                                      | 829                                            | 308                                                     | 3315                                                                 | 7084                                             | 45.8                                                                                                                       |
| Vidēji Latvijā<br><i>Average in Latvia</i>                                                                                     | 1431                                           | 359                                                     | 77302                                                                | 171243                                           | 45.1                                                                                                                       |

**Avots:** autoru aprēķini pēc LSA un CSP datiem.

3. tabula / Table 3

**Lauksaimniecības statūtsabiedrību asociācijas dalīborganizāciju grupējums pēc govju skaita 1997., 2000. un 2004.gadā**  
***LSAS member organizations grouping of farms by cows in years 1997., 2000. and 2004.***

| Govju skaits saimniecībā<br><i>Cows at farms</i>                  | Saimniecību skaits grupās<br><i>Number of farms at the groups</i> |       |       |
|-------------------------------------------------------------------|-------------------------------------------------------------------|-------|-------|
|                                                                   | 1997.                                                             | 2000. | 2004. |
| Līdz 200                                                          | 6                                                                 | 12    | 12    |
| Pirmās grupas īpatsvars, %<br><i>Proportion of first group</i>    | 13.9                                                              | 27.9  | 27.3  |
| 201-300                                                           | 8                                                                 | 13    | 9     |
| 301-500                                                           | 15                                                                | 14    | 15    |
| >500                                                              | 14                                                                | 6     | 8     |
| Pēdējās grupas īpatsvars, %<br><i>Proportion of last group, %</i> | 32.6                                                              | 14.0  | 18.2  |
| Saimniecību kopskaits ar govīm<br><i>Count of farms with cows</i> | 43                                                                | 45    | 44    |

**Avots:** autoru grupējumi un aprēķini pēc LSA datiem.

4.tabula / Table 4

**Govju produktivitāte LSA dalīborganizācijās 1997., 2000. un 2004. gados**  
***Productivity of cows in LASAS in Years 1997., 2000., 2004.***

| Piena izslaukums no govs gadā, kg<br><i>Milk – yield a cow (ka per year)</i> | 1997. | 2000. | 2004. |
|------------------------------------------------------------------------------|-------|-------|-------|
| līdz 3000 kg                                                                 | 15    | 10    | 2     |
| 3000-4000                                                                    | 20    | 19    | 9     |
| 4000 – 5000                                                                  | 8     | 12    | 18    |
| >5000                                                                        | 0     | 4     | 15    |
| Saimniecību (>5000) īpatsvars (%)<br><i>Proportion of farms (&gt;5000)</i>   | 0     | 8.9   | 34.1  |
| Saimniecību- piena ražotāju kopskaits<br><i>Changes of farms' count</i>      | 43    | 45    | 44    |

**Avots:** autoru apkopots un aprēķināti LSA dati.

■ patreizējā piena tirgus konjunktūra var rosināt būtiskas izmaiņas saimniecību attieksmē pret piensaimniecības nozari.

**3. Produktivitātes un ražības attīstība**  
***Development of productivity and oficiency***

Šis rādītājs pētījumā tika iekļauts loģisku apsvērumu dēļ, jo tam ir īpaša nozīme šo statūtsabiedrību produkcijas konkurētspējai.

Jau citos pētījumos noskaidrots, ka racionāla, ekonomiski efektīva saimniekošana mūsdienās sākas tikai pēc graudaugu ražības 4 t ha<sup>-1</sup> un piena izslaukumiem – 5 tonnas no govs gadā.

Šajā ziņā LSA dalīborganizācijās pēdējos gados ir liels progress.

Kā redzams 4. tabulā, analizējamā periodā

četras reizes palielinājies to saimniecību skaits, kurās izslaukums no govs pārsniedzis 4000 kg robežu; vēl krasāk pieaudzis saimniecību skaits ar 5000 kg izslaukumu: pēdējos 4 gados arī tādu saimniecību skaits četrkāršojies.

Nopietns progress vērojams arī graudu ražošanā: - 2004.gadā jau 22 % jeb vairāk kā piektā daļa no LSA saimniecībām ieguva vairāk par 4 t ha<sup>-1</sup> graudu..

**4. Ieņēmumu dinamika**  
***Dynamics of the incomes***

Šāda aspekta izpētei izvēlējamies LSA saimniecību grupēšanas metodi par tās pazīmi izvēloties ieņēmumu kopsummu, kas labi raksturo ekonomisko attīstību. Aprēķini un dati – 5. tabulā.

■ Īpaši pozitīvi vērtējams fakts, ka palielinās saimniecību skaits vislielāko ieņēmumu (> 1000 tūkst. Ls) grupā.

■ Sevišķi strauji (trīs reizes) pieaudzis to dalīborganizāciju skaits, kuru ieņēmumi lielāki par 500 tūkst. latiem.

■ Vismazāko (< 100 tūkst. latu) ienākumu grupā dalīborganizāciju skaita konstants samazinājums pārliecinoši raksturo šo saimniecību (uzņēmēj sabiedrību) ekonomisko attīstību.

■ Tikpat konstanti samazinās arī otrā grupa ar ieņēmumiem 101 – 200 tūkstošiem latu, kā arī abu grupu (≤ 200 tūkst. Ls) saimniecību kopskaits.

### 5. Darba ražīguma attīstība *Development of work efficiency*

Konkurētspēju lielā mērā nosaka darba ražīgums saimniecībā. Tā izpētei izvēlējamies vairākus indikatorus, kas redzami 6. tabulā.

No 6. tabulā sakārtotiem datiem un aprēķiniem veidojas konkrēti secinājumi vai interpretējumi:

■ nodarbināto skaits šajās saimniecībās strauji un konsekventi samazinās;

■ sevišķi strauji nodarbināto skaits samazinājies 1998. – 2000. gadu periodā, bet

pēdējos gados ķēdes mazāks vai neliels samazinājums var liecināt par to, ka saimniecībās patlaban lietojamās mašīnas, iekārtas un tehnoloģijas neļauj straujāku darba ražīguma pieaugumu;

■ visā periodā strādājošo skaita bāzes samazinājums ir vairāk kā divkārtīgs;

■ apstrādātās zemes platība uz 1 strādājošo nemitīgi pieaugusi;

■ neskatoties uz saimniecību skaita un LSA dalīborganizāciju izmantotās LIZ samazinājumu 1998.-1999.gg., atlikušās dalīborganizācijas ne tikai spējušas kompensēt likvidēto saimniecību ražošanas apjomus, bet arī strauji attīstīties.

■ sevišķi progresējusi graudu ražošanas tehnoloģija, kā rezultātā uz 1 nodarbināto saražotā graudu masa pieaugusi trīskārtīgi;

■ arī piena ražošanas organizācija un tehnoloģija nopietni progresējusi par ko liecina gandrīz trīskārtīgs ražotā piena daudzuma pieaugums, rēķinot uz vienu nodarbināto;

■ neto apgrozījums uz vienu nodarbināto saimniecībās audzis apgriezti proporcionāli nodarbināto skaita samazinājumam un visā periodā pieaudzis 2.5 reizes.

5. tabula / Table 5

### Latvijas Statūtsabiedrību asociācijas dalīborganizāciju grupējums pēc ieņēmumiem no produkcijas realizācijas 2001.-2004. gados

*LSA Mo grouping by incomes from production carry out in Years 2001.-2004.*

| Ieņēmumi no realizācijas,<br>tūkst. Ls<br><i>Incomes from production,<br/>LVL</i> | Saimniecību skaits grupās<br><i>Number of farms at the groups</i> |       |       |       |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------|-------|-------|-------|
|                                                                                   | 2001.                                                             | 2002. | 2003. | 2004. |
| <100                                                                              | 17                                                                | 16    | 17    | 10    |
| 101-200                                                                           | 13                                                                | 12    | 9     | 7     |
| ? 200 kopā / total                                                                | 30                                                                | 28    | 26    | 17    |
| % izmaiņas grupā<br><i>% changes in the group</i>                                 | 100                                                               | 93.3  | 86.6  | 56.7  |
| 201-500                                                                           | 20                                                                | 19    | 20    | 18    |
| ≤ 500                                                                             | 50                                                                | 47    | 46    | 35    |
| % izmaiņas grupā<br><i>% changes in the group</i>                                 | 100                                                               | 94.0  | 92.0  | 70.0  |
| >500 - 1000                                                                       | 4                                                                 | 6     | 6     | 12    |
| >1000                                                                             | 6                                                                 | 6     | 6     | 8     |
| > 500                                                                             | 10                                                                | 12    | 12    | 20    |
| % izmaiņas grupā<br><i>% changes in the group</i>                                 | 100.0                                                             | 120.0 | 120.0 | 200.0 |

Avots: autoru aprēķini pēc LSA datiem.

6. tabula / Table 6

**Darba ražīguma pieaugums Latvijas Statūtsabiedrību asociācijas dalīborganizācijās  
1997.-2004.gadu periodā**  
*Work efficiency growth in LSAS MO 1997 - 2004*

| Rādītāji<br><i>Indicators</i>                                                                                                     | Gadi / <i>Years</i> |       |       |       |       |       |       |        |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------------|-------|-------|-------|-------|-------|-------|--------|
|                                                                                                                                   | 1997.               | 1998. | 1999. | 2000. | 2001. | 2002. | 2003. | 2004.  |
| Nodarbināto skaits / <i>Employed</i>                                                                                              | 8947                | 6868  | 5762  | 4430  | 4108  | 4008  | 4053  | 3878   |
| Ķēdes samazinājums / <i>Decrease of chain</i>                                                                                     | -                   | -2079 | -1106 | -1332 | -322  | -100  | 45    | -175   |
| Ķēdes samazinājuma temps, %<br><i>Pace of chain decrease</i>                                                                      | -                   | -23.2 | -16.1 | -23.1 | -7.3  | -2.4  | 1.1   | -4.3   |
| Bāzes samazinājums, %<br><i>Basis decrease, %</i>                                                                                 | 100                 | 76.8  | 64.4  | 49.5  | 45.9  | 44.8  | 45.3  | 43.3   |
| Atsevišķi LSA dalīborganizāciju kvantitatīvie rādītāji:<br><i>Separately quantitative indicators of LSA member organizations:</i> |                     |       |       |       |       |       |       |        |
| Apstrādātās (izmantotās) LIZ platība, (ha)<br><i>For usage land ha</i>                                                            | 93870               | 91011 | 86960 | 74301 | 74284 | 74300 | 74164 | 77302  |
| Ražoti graudi, t<br><i>Produced grain, t</i>                                                                                      | 79150               | 81522 | 69779 | 90950 | 68514 | 87098 | 85625 | 103908 |
| Ražots piens, t<br><i>Milk, t</i>                                                                                                 | 59760               | 59732 | 58247 | 55407 | 57808 | 61117 | 64840 | 70379  |
| Neto apgrozījums (tūkst.Ls)<br><i>Neto turn-over (thousand Lats)</i>                                                              | 23488               | 25744 | 21942 | 21992 | 22939 | 24410 | 25566 | 33706  |
| Uz 1 nodarbināto:<br><i>For 1 employed:</i>                                                                                       |                     |       |       |       |       |       |       |        |
| ◆ Apstrādātās (izmantotās) LIZ platība, ha<br><i>For usage land ha</i>                                                            | 10.5                | 13.2  | 15.1  | 16.8  | 18.1  | 18.5  | 18.3  | 19.9   |
| ◆ Ražoti graudi, t<br><i>Produced grain, t</i>                                                                                    | 8.8                 | 11.9  | 12.1  | 20.5  | 16.7  | 21.7  | 21.1  | 26.8   |
| ◆ Ražots piens, t<br><i>Milk, t</i>                                                                                               | 6.7                 | 8.7   | 10.1  | 12.5  | 14.1  | 15.2  | 15.6  | 18.1   |
| ◆ Neto apgrozījums, Ls / <i>Neto turn-over (thousand Lats)</i>                                                                    | 3512                | 4213  | 4120  | 4964  | 5584  | 6090  | 6308  | 8691   |
| ◆ Neto apgrozījuma bāzes pieaugums, %<br><i>Neto turn-over basis increasing, %</i>                                                | 100                 | 120.0 | 117.3 | 141.3 | 159.0 | 173.4 | 179.6 | 247.5  |

*Avots: autoru aprēķini pēc statūtsabiedrību datiem.*

**Galvenie secinājumi**  
*Main conclusions*

1. Lauksaimniecības statūtsabiedrību asociācijas dalīborganizāciju skaits ir krasi atšķirīgs Latvijas rajonos un reģionos: Tukuma

rajonā darbojas 16.4%, bet visā Latgalē tikai 4,9% no dalīborganizāciju kopskaita.

2. LSA apvienotās lielākās, spēcīgākās lauksaimniecības uzņēmēj sabiedrības – akciju sabiedrības, sabiedrības ar ierobežotu atbildību un kooperatīvās sabiedrības.

3. LSA dalīborganizācijas pārsvarā ir daudznozaru saimniecības, bet to galvenās specializētās nozares ir dažādas.

4. Govju produktivitāte un kultūraugu ražība dalīborganizācijās ir ļoti atšķirīga, bet kopumā tā konsekventi progresē.

5. Pieaug to LSA saimniecību skaits, kuru gada ieņēmumi pārsniedz miljonu latu, bet sevišķi strauji palielinās to saimniecību grupa, kuru gada ieņēmumi ir lielāki par 500 tūkst. latu.

6. LSA dalīborganizācijās ievērojami un nemitīgi paaugstinās darba ražīgums.

### **Izmantoto informācijas un literatūras avotu saraksts**

#### ***Usful information and sources of literature***

1. Lauksaimniecību statūtsabiedrību asociācijas dalīborganizāciju darbības gadu pārskati
2. Lauksaimniecības statūtsabiedrību asociācijas datu bāze
3. Lauku saimniecību struktūra Latvijā 2003.gada jūnijā, CSP, 2004.- 86 lpp.
4. Latvijas lauksaimniecība 2004.gadā. Īss statistisko datu krājums. CSP, 2005. – 36 lpp.

## Selected environmental costs of globalisation in the food economy

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### **Abstract**

The most outstanding features of the globalisation of agribusiness are briefly presented. Then an estimation of some components of the environmental cost of globalisation in the food economy is being attempted, restricted to the cost emerging from the additional fuel consumption in the international transport. Two components of this cost are the wastage of the natural resource of fossil fuels and the acceleration in polluting the atmosphere by the combustion products. The additional costs are evaluated at 48.5 billion USD and 2.3 billion USD respectively for the period of 1980 through 1998, in 1998 prices and discounted to this year.

**Key words:** globalisation, agribusiness, environmental costs.

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### **Elements of globalisation in the food economy**

Globalisation in the food economy means first of all creation of a global market for agricultural products and, not exactly equivalent to the first, a global market in foodstuffs. These markets also reallocate the global food production. Globalisation applies first of all to the wholesale trade, but the retail trade, in the form of hypermarkets and chains of shops and restaurants, is also quickly globalising.

The trend towards globalisation originates from striving for growth by the big, usually transnational, commercial firms. Their centres are actually located in the rich countries with predominantly white population while formally they are frequently registered in the countries of 'tax paradise' outside the mentioned zone.

The incentives for globalisation in the big firms

which are promoting this tendency can be listed as follows:

1. Seeking new sale markets by transforming the demand for food in direction of creating a uniform global model of consumption (including nutrition) and eliminating the local consumption patterns<sup>1</sup>.
2. Seeking the cost reductions in labour costs and therefore transferring the production to the countries with prevailing very low wages, mainly to China, India and Indonesia.
3. Seeking the firm's environmental costs reduction by transferring the environmentally harmful and hazardous production into the poor parts of the world, where the public opinion shows only a minor interest in the state of the natural environment. In these countries the public is mostly interested in mere survival and not in the health conditions in the long run, in welfare or in the quality of life<sup>2</sup>.

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<sup>1</sup> Compare the very strong trend towards uniformisation of consumption of vegetal products in the last decades in Europe (Zaj'czkowska and Borowska 2001). The future development of consumption models may also lead to a diversification into two as, for example, in the West Africa, where a division into an African and European model of consumption has for long been observed (Situation...1977; Sénégal... 1976). The first is followed by most of the local population while the second by the white residents and the richer strata of the black population in towns. The growing income gap between the poor and the affluent social groups and pauperisation of the first accompanying globalisation may induce the poorer parts of the society in some countries to stick to the traditional pattern of consumption, basing on the cheapest and simplest local products.

<sup>2</sup> So called Leszczyski's theorem (quoted after Sasinowski (1998)) expresses it in short by stating that below the GDP of 1 thousand USD per capita no interest in the natural environment exists. Dollar in Leszczyski's times (50ties of XX century) equals approximately 5 dollars nowadays which means Poland is situated now just slightly above this verge. As a flagrant example of the consequences of exporting the hazardous production into the LDCs may serve the case of an accident in an American (Union Carbide, now Dow Chemicals) chemical factory in Bhopal, India in 1984. Pursuant to a leak of poisonous gases about 8 thousand people died in first three days after the disaster and many other suffer severe sickness until now.

4. Seeking the 'tax paradises' like the Caribbean Islands, Hong Kong, Singapore, in Europe in some variations Lichtenstein, Luxemburg, Ireland, San Marino, Monte Carlo, Andorra etc<sup>3</sup>. In Poland and in other East European countries they can be identified with so called special economic zones (in Poland tax exemption in first 10 years, half exemption in the next 10).

5. Seeking cheap sources of raw materials which are sold cheaply in the poor countries as their common property. This sort of property is often treated as nobody's property and the revenues from exploitation are mostly appropriated by the narrow groups having the political power<sup>4</sup>. The classical mechanism called in environmental economics 'the tragedy of commons' is playing its role there and it results in overharvesting the renewable or depleting too soon the non-renewable resources.

6. Seeking cheap sources of fixed assets and capital which takes place in the postcommunist countries. In Poland the national productive property was almost completely sold abroad for about 10% of its worth in ten years after the fall of communism (Poznański 2000).

The globalistic trend has been intensified in the last decades thanks to the new technological (developments in telecommunications, jet plane air cargo and passenger transportation, pipeline transportation, great tankers and bulk carriers) and political possibilities. The last is attached to the fall of the main obstacle in form of the so called socialistic camp in Europe and of many supported by it regimes in Asia and Africa. The trend was visible in the precedent decades and centuries and bore then the name of colonialism and neo-colonialism and in certain variations still more generally imperialism<sup>5</sup>. These historical tendencies have however had no so propitious technological terms for development as nowadays and their mechanism usually worked differently (political expansion accompanied or sometimes even preceded and not followed the economic submission).

The transnational firms share the ideology of liberalism and their political postulate is the liberal economic policy of governments and the supragovernmental organisations. This ensues from the simple truth that in the free market the most powerful participant wins. The winner ruthlessly eliminates the other competitors and the completely free markets wind inevitably up as monopolies.

The transnational corporations have become already in many areas stronger than the national governments and are able to force their will over the will of the later. For example the Multilateral Agreement on Investment from April 24, 1998, created within the OECD, forbids publishing the national lists of the greatest polluters because of their harmful impact on the listed firms' image.

The Ricardian theory of production allocation through the mechanism of comparative advantages of particular countries has nowadays lost its validity because of the free flow of capital between the countries. The capital is located now in places in these places in the world where the costs reach the absolute minimum (first of all the most important labour costs) and not in the branch of industry where the comparative costs are lower in a given country. The investment decisions are not usually any more bound by the institutional and technical barriers to one country as in Ricardo's

<sup>3</sup> For example see the analysis of the phenomenon by Bartelsman and Beetsma (2001).

<sup>4</sup> E.g. compare work by Tornell and Lane (1999).

<sup>5</sup> Compare for example the work by V. Ulyanov (he wrote under the pseudonym V. I. Lenin) 'Imperialism as the ultimate state of capitalism' (Lenin, 1917). The author, being a utopist as to what concerns the economic future of the economy created under the dictatorship of the political party he ruled, was at the same time a rather insightful analyst and critic of capitalism he combated and as an economic strategist he betrayed a tendency towards realism (New Economic Policy in the last years of his rule in the Soviet empire). However in forecasting the development of imperialism the right was rather with his political enemy Karl Kautsky. Promoted by him and his less known predecessors name of ultraimperialism or interimperialism seems better suit the development of world economy in the second half of twentieth century. In the concept of ltraimperialism the separate imperialisms would unite instead of struggle, joined in common exploitation of the world by the 'international united financial capital', with no wars between the developed capitalistic countries. We have witnessed it for the last half century. Wars are waged between poor countries or between poor and the rich ones, and never between the rich. Wars between the states have not been replaced so far by the wars between the corporations. Hence the supposition that a certain field of confidence and agreement exists between them. The name of neocolonialism comes back into use, nowadays with respect to the subject matter, linked with an attribute of 'ecological' (Czaja, 2004).

times and therefore have a global and not a local character.

As the strategic investment decisions have fallen into hands of the transnational firms, the GDP growth is realized mainly by the growing profits in these firms with simultaneous decline in employees' incomes, due to the shrinking demand for labour in the developed countries<sup>6</sup>. The reallocation of productive activities means gains for the richest and the poorest (in the selected countries where the investments in real economy are located) and the losses for the medium classes in the old industrial countries. Using the terms employed in the environmental economics it means the entropy growth of poverty and polarisation of wealth.

In the food economy the impact of globalisation is first of all marked by an enormous growth of haulage of mass products. This entails a strong increase in energy consumption and therefore depleting its non-renewable sources as well as increase of dust and gaseous emissions into the atmosphere.

Generally the great firms prefer to produce the agricultural products on mass scale in the countries with low wages and minor or nonexistent ecological requirements, and transport them for long distances in mass quantities, from differentiating the production locally, on a smaller scale, with higher average wages and more strict ecological requirements but lower transportation costs for shorter distances.

The already well ingrained consumption habits in the well developed countries which become standard for the western civilization as well as for the wealthier social strata in the other parts of the world hardly tolerate the seasonality of the fresh fruit or vegetable deliveries (as an example for Europe can serve the off-season strawberries from Norway and Finland and then from the southern hemisphere). Luxurious consumption, in line with the well known Veblen's paradox, tends also to replacing consumption of the local food by an ostentatious consumption of exotic food products. As an example visible in Poland the apple imports from New Zealand, of fruit necessarily more expensive and otherwise not more tasty than the home grown varieties, may be quoted.

Rent seeking by distant locations of purchases may be exemplified by apple concentrate imports from Poland to Germany despite the customs barriers before the Polish inclusion into the European Union. The industrial apples were purchased in Poland in the peak season of 2001 and 2002 for 0.07 and 0.08 zloty per kg, while the German minimum price was 0.40 and 0.35 zloty per kg respectively. The difference in prices resulted mostly from the difference in labour costs.

Seeking the low cost labour supply is also accomplished by not only the long distance transfer of merchandise but also by the labour force transfers themselves. In many cases these transfers are illegal, though some political forces tend to their toleration and legalisation. In food economy in Poland for example a major part of the cheap catering has been taken control of by the Vietnamese immigrants and in the big orchard farms in central Poland a massive inflow of seasonal workers from behind the eastern frontier is observed<sup>7</sup>. Also in comparatively wealthy households in Warsaw an inflow of housemaids from the same direction can be noted.

### **Environmental costs of globalisation of trade in agricultural products**

In the last decades a much quicker growth of the volume of foreign trade in agricultural products than the growth of world agricultural production is registered (fig. 1). Hence the balance between the volume of this trade and the volume of agricultural production tips down in favour of the first (fig. 2). Increase in international trade causes an increase of long distance transportation of agricultural products and therefore an increase of volume and cost of fuel burnt. Burning down fuel means depleting the natural resource of crude oil and emitting the combustion products to the air, and this translates into environmental costs.

Data on agricultural production and trade in agricultural products used in the present calculations have been taken from the yearbooks published by Food and Agriculture Organization (FAO... 1998 and antecedent). This organization publishes, among others, percentage indices of the volume of agricultural production and volume of

<sup>6</sup> Compare the diagrams drawn up by Goldsmith (1995).

<sup>7</sup> They work usually for half the regular Polish wage and if the social security contribution is also counted, for one third.

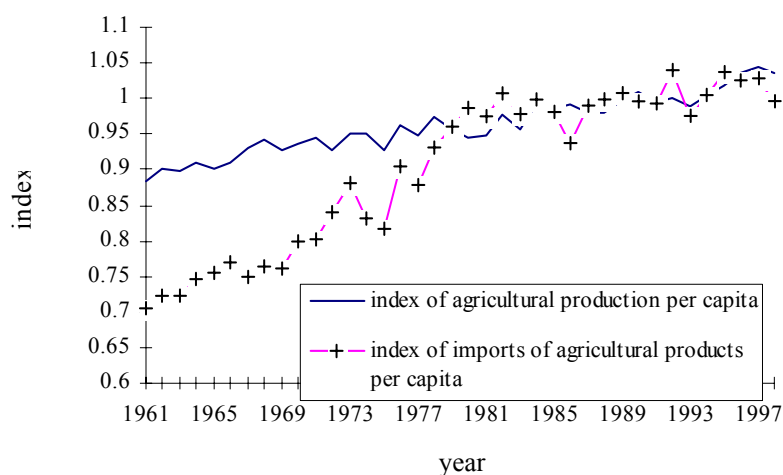


Fig.1 World indices of agricultural production and international trade in agricultural products per capita, average for years 1989 - 1991 set equal to 1

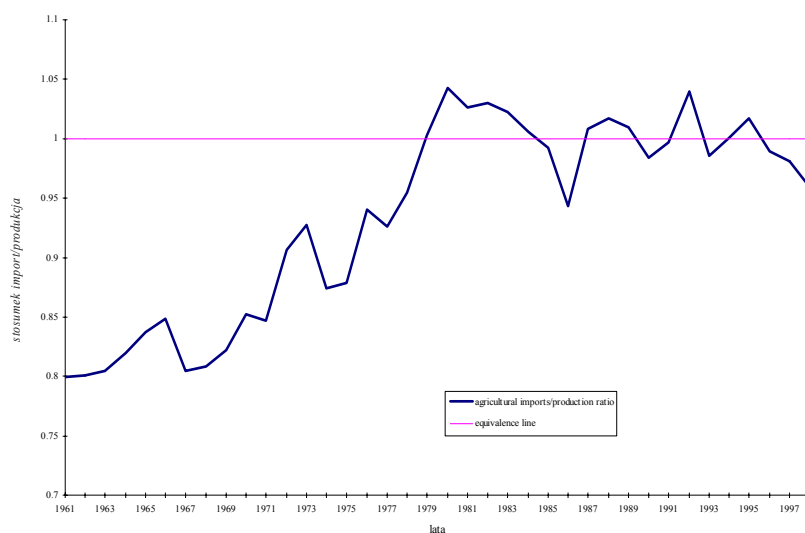


Fig.2 Relation between the world imports of agricultural products and world agricultural production per capita, average for years 1989 - 1991 set equal to 1

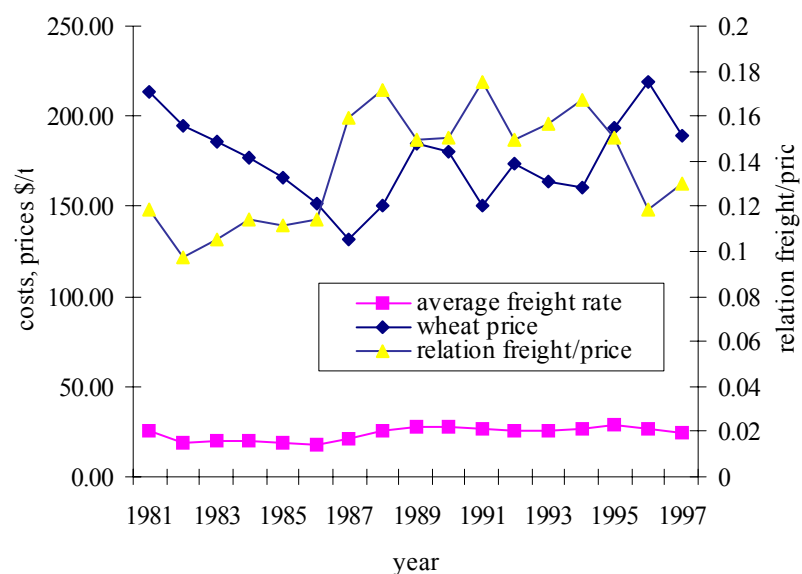


Fig. 3 International market wheat prices, indicative freight rates and relations freight/price

international trade in agricultural products and foodstuffs in separate countries, groups of countries and the whole world. Unfortunately, in the last years the indices of volume of the turnover in the agricultural trade ceased to be published because of the difficulties with maintaining the homogeneity of data. The partition or collapse of certain states (the most widely known examples are the partition of the former Soviet Union, the former Socialist Federal Republic of Yugoslavia and reunion of two German states) transformed some of the international trade into domestic trade and vice versa. Up to 1995 FAO was publishing the estimates of volume of the international agricultural trade collaterally also according to the old political division of states. The indices of trade volume have been additionally estimated by the author for years 1996 – 1998 but any longer extrapolation seemed too arbitrary and then unjustified.

Except for the environmental costs resulting from the rise in transportation another group of costs is generated from the rise in energy consumption in the long term storage of foodstuffs like cooling and freezing chambers for meat, fish, fruit, vegetables, flowers or in the banana ripening chambers. The linkage of these costs with the growth of the international trade is however not quite simple while the costs relatively less significant than the transportation costs and therefore they have been in the present calculations neglected.

The change in relation between the volume of international trade in agricultural products per capita of world population to the corresponding volume of agricultural production has been taken as a basis for estimation of the quantitative effect of globalisation (fig. 2). It was assumed that this relation in the 60ties of XX century was the one that well suited the human needs of international exchange of agricultural products and that the next developments in this relation were pursuant to the globalisation that caused a partial replacement of the local products by imports. In effect in years 1980 – 1998 a surplus of 17.7% above the volume of trade correspondent to the initial relation between the agricultural production and the international trade has been noticed.

International trade requires long distance transport. The costs of this transport in the agricultural trade have been roughly estimated by using the ratio of the average international price of 1 tonne of wheat to the average haulage costs of 1 tonne of wheat in most popular routes of transportation in years 1981 - 1997. The ratio of costs of transportation to the value of transported goods in the agricultural trade has been assumed to be well approximated by the ratio of long-distance freight to the value of transported wheat. FAO publishes both numbers (FAO Trade... 1998 and antecedent). The ratio between them is illustrated in fig. 3. It had been taken for relatively stable and in the further calculations its mean value of 13.76% has been used. This ratio has been multiplied by the value of the additional increase in the agricultural trade in consecutive years belonging to the globalisation period defined as above. In this way the costs of additional transport connected with globalisation have been determined.

Fuel costs have been separated from the transport costs of the international agricultural trade. A manual of maritime transport economics (Stopford, 1988) served as a source of information for this calculation. The share of fuel cost in the total transport cost varies with the changes in prices of ship engines fuel, which in turn are dependent on the variations in the price of crude oil. As representative for the investigated period shares given by Stopford for years 1980, 1985 and 1986 have been taken. The mean value equalled 33%. This value has been used in calculating the value of the additionally, as an effect of globalisation, burnt ship engine fuel by multiplying it by the additional freight costs in consecutive years in the period 1980 – 1998. These costs have been inflated to the 1998 price level by the US GDP deflators<sup>8</sup>.

The sum of the above annual additional costs has been recalculated in expected prices of 2020. About this year the world's stock of crude oil will probably become completely depleted (McRae quoted by Żychowicz, 1998)<sup>9</sup>. Fuel burnt down

<sup>8</sup> <http://w3.access.gpo.gov/usbudget/fy2001>.

<sup>9</sup> Obviously it is a very simplified attitude, as in the other cases in this study. Prognoses of crude oil depletion are numerous and vary significantly in numbers and dates. Most probably the conventional crude oil extraction volumes will begin to decline already about 2010 (Cambell and Laherrere, 1998). For a certain time it will be partly replaced by an extraction from non-conventional sources like oily sands in Canada and bituminous shale (George, 1998).

in the last decades of XX century, if saved, could be taken advantage of about that date and therefore the savings and, consequently, the wastage should be valued at that price. This price has been estimated by using as a coefficient of proportionality the average ratio of the ship fuel price to the crude oil price in several years. The forecasted crude oil price at the point close to depletion of the stock has been assumed as the highest of the so far noted prices in 1991 (Dr. Ed Yardeni... 2001) inflated to the 1998 level.

The calculation assumed the point of view of 1998 as the base point for appraisal of gains and losses and therefore the future values have been discounted to this year. Discount rate used equalled 4%. This rate was disclosed by Martin Weitzman at the world congress of environmental economists, held in Venice in 1998, as the average rate recommended by a set of interviewed environmental economists from all over the world as reflecting properly the intergenerational fairness in the access to environmental resources<sup>10</sup>.

The worth of the additional quantities of ship fuel (heavy fuel oil for the engine and diesel oil for starting the engine and for electric generators) wasted due to globalisation in food economy amounted to 48.5 billion USD.

The other element of the environmental losses due to this globalisation consists of the premature emissions of the combustion products into the atmosphere. If this premature use did not occur, these amounts of fuel would be probably burnt down around 2020. As an approximation of the social (macroeconomic) environmental costs of fuel combustion the Polish environmental fee of 8 USD/tonne has been used in the calculation. The unit weight of fuel has been presumed at 0.95 g/cm<sup>3</sup> after Jarosiński (1996). The above approximation is validated by presumption that the legislator has correctly evaluated the environmental losses caused by the exhaust substances emission and established the fee according to the theory of Pigovian tax at the level of the marginal environmental loss. Environmental losses due to emissions from years 1980 – 1998 have been charged with interest (4% a year, as explained) until 1998 and summed while the same losses occurring in 2020 have been discounted to the 1998 level. The difference between the two values has been taken

as a net loss caused by the acceleration of combustion. This net loss amounted to 2.3 billion USD.

A sum of the of two kinds of losses represent the estimated total environmental cost of globalisation in food economy with respect to the international trade, from the point of view and in the price level of 1998. It has been estimated at 50.8 billion USD.

## Conclusion

Among many negative effects of globalisation in food economy (like frequently mentioned deforestation, widespread monoculture and decreased biodiversity) also wastage of liquid natural fuels and acceleration of emissions of combustion products into the atmosphere can be counted. They are the outcome of the excessive growth of the haulage of agricultural products. The global outcome has been estimated from the perspective of 1998 and in 1998 price level at 50.8 USD.

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## Quality Management Issues In Food Production Chain "From Farm to Fork"

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### ***Abstract***

The aim of the article is to identify and reason of quality management research objectives and tasks to be integrated into the research in technological, engineering and other areas to assure "From Farm to Fork" food safety and quality.

Quality management research areas in the article are: minimizing the gap between organizational culture and quality culture in companies, which have already implemented Quality Management Systems according to ISO 9000 quality management standards and identifying the ways for quality management systems to evolve into TQM systems in all food production companies; developing methods of satisfaction of interested parties (customers, owners, company employees, suppliers, bankers, unions, public partners); developing original compensation systems based on work motivation research, which take into account regional and national organizational quality culture in food process "From Farm to Fork" and helps workers to strive for quality, punctuality, and positive job attitude, motivates developing TQM, EFQM Excellence Model, ISO 9000 family quality management standards, HACCP, FDIS 22000:2005 ISO standards and technology integration.

**Key words:** Quality management, TQM, quality culture, food production, management and technology integration.

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### **Introduction**

"From Farm to Fork" is the EU integrated approach to food safety and quality.

This approach involves these legislative actions: develops effective control systems and evaluates food safety and quality compliance with the standards of the EU, controls animal health, animal welfare, animal nutrition and plant health sectors within the EU and third countries in relation to their exports to the EU.

Quality assurance of foodstuffs is a complex task of paramount importance. It deals with food safety and general quality and valorization of typical and traditional food. Technological innovations of "From Farm to Fork" are just behind the corner and integrated efforts of information engineers, food technologists and quality management specialists can help to reach the goal.

The object of investigation is quality management issues in food production chain "From Farm to Fork".

The aim of the article is to identify and to reason of the quality management research objectives and tasks to be integrated with the research in

technological, engineering and other areas to ensure "From Farm to Fork" food safety and quality.

The tasks of the article are:

- Theoretical reasoning;
- Substantiating quality management research areas, objectives and tasks to be integrated with the research in technological, engineering and other areas to ensure "From Farm to Fork" food safety and quality.

**Research methods:** logical, systematic and comparative analysis.

### **Basis of the research**

Quality management is a continuing social and organizational experiment. Diffusing the methodology of quality improvement is an investment into regional or national quality culture (Magure, 2000). Solid use of research infrastructure delivers skills and knowledge to achieve better processes and performance of food production chain, and produces favorable effects upon health and well-being of European citizens due to safer, higher quality and health promoting food.

Dr. Armand Feigenbaum, one of two honorary members of the International Academy for Quality, states that "quality has become one of the twentieth century most important management ideas..." and "...quality has become an international business language" (Feigenbaum, 1999).

The European Quality Vision states: "As we enter this millennium, the European economy is facing a totally new business environment under twin impulses of globalization and technological progress. This calls for a new attitude from different partners. ...The main goal, for the partners, must be the improving of competitiveness as an essential means of generating rising standards of living for population as a whole, whilst operating on markets opens international competition" (Towards a European Quality Vision – 2001' EOQ Brussels, January 2001). The Vision states that "...isolated competitive strategies are no longer valid. Companies have to work together to combine inputs from a range of sources to create products and services. As a result, the core task of firms has to become the ongoing reconfiguration and integration of competence along the value and supply chain that make up the extended enterprise, while satisfying all stakeholders (customers, stakeholders, employees, suppliers and society as a holistic network), and continuously internal efficiency. ...These dynamic relations between customers and suppliers are found to be particularly important drives for supplier SME to adapt, innovate, and to continuously improve and develop new skills".

Main elements of the European Quality Vision are:

- Harnessing Diversity.
- Building on Success.
- Winning Together.

The research is based on the European Quality Vision elements.

### **Harnessing Diversity**

The European Vision of Quality states that Europe's diversity holds the key to its future competitiveness. The ability to collaborate in higher forms of partnership with the appropriate methods and competence will become of critical importance. Current European thinking is too much focused on harmony; however, values need to reflect collective vision while simultaneously respecting individualism, diverse rhythms of change and particular perspectives. At the same time, new

language, development and deployment of new methods are required to simulate and harness the innovative creative energy.

### **Building on Success**

The European Vision of Quality states that there is a growing awareness of the need for Europe to develop new concepts and models based on an explicit and agreed set of social, cultural, environmental and ethical, safety and other values. Partnerships based on values, where differences are respected and esteemed, will create synergy for success, thus providing benefits to all stakeholders, and contributing to general well being of wider community. Success at local, regional, national and pan-national levels reinforces the possibility of positive 'myths', so that 'Made in Europe' becomes synonymous with 'excellence'.

### **Winning Together**

The European Vision of Quality states that current environment demands co-operation, both horizontally - across diverse players, and vertically - in complex supply chains. Cooperation has been successfully completed against intense international competition. Winning Together fundamentally shifts European perspective from a narrow view of winning to winning with others.

## **Research areas**

**Research of regional and national quality culture** in food production process "From farm to Fork" as a Total Quality Management (TQM) implementation success factor is a relevant scientific TQM problem and the solution of it will help to prepare practical recommendations for quality culture in different European regions (Vanagas, 2005).

Usually, quality management implementation starts with ISO 9000 family or FDIS 22000:2005 ISO standards. However, every company has its own way to TQM and EFQM Excellence model, and success depends on transforming organizational culture into quality culture (Ruzevicius, 2004; Anttila, 2001; Tari, 2002). **Most effective methods, to minimize the gap between organizational culture and quality culture** in companies, which have already implemented Quality Management Systems according to ISO 9000 quality management standards (Abramavičius, 2001), and **ways for quality management systems to evolve**

**into TQM systems** in all food production companies, are a very important issue.

Research of organizational culture gap is a part of TQM implementation methodology in companies with no or minor quality management activities such as simple methods of quality improvement or some degree of product or process standardization. This methodology is also applied in companies with more proliferated quality management incentives such as standardized quality management systems or any other quality assurance or management systems. Organizational culture gap is regarded as a universal method to implement TQM, and any kind of quality management movement in a company is assessed in terms of organizational culture and shaped towards TQM according to the findings of assessment. At the same time, final set-up of TQM strategy helps to overcome culture gap in a company.

Recommendations and methodology, defining organizational culture gap in a chain of food production companies, should be worked out. Methodology has to be based on research which evaluates and assesses current status of quality management in companies, and sets up a uniform TQM strategy in the sector.

Methods, defining organizational culture gap in food production chains with quality management systems, undergo the following research stages:

- The degree of quality management activities in food production chains in terms of systematic or non-systematic way of quality management is assessed.

- Quality policies, continuous improvement and other quality management methods in food production chains, which help to see differences in strategies, are worked out.

- Recommendations to achieve uniform understanding and uniform activities in food production chains are worked out.

Insights into **aspects of satisfaction of interested parties** (customers, owners, people in a company, suppliers, bankers, unions, partners of society) will deepen understanding of TQM.

First, it is necessary to define stakeholder model and show links between organizational wealth and stakeholder collaboration; it is necessary to build relationships between stakeholders and stakeholder groups and develop methods that satisfy their interests which lead to higher food safety and quality. Second, it is necessary to as-

sess relationship building strategy and, consequently, to review and refine company mission and values in food production "From Farm to Fork" industry.

The research shows positive impact of changing "stakeholder management" approach upon "stakeholder collaboration". A collaborative model unveils stakeholder relationships and is a source of opportunity and competitive advantage to raise food safety and quality. Holistic approach allows an organization to build on synergies that occur when positive relationships with one stakeholder group, e.g. local community, beneficially impact on another stakeholder group, e.g. customers.

Organizational wealth in food industry is created due to relationships with stakeholders of all kinds – resource providers, customers and suppliers, social and political actors – all of them improve food safety and quality.

Main deliverables are:

- Identifying stakeholder interests in order to satisfy them by higher food safety and quality.

- Developing and implementing research methods to study stakeholder interests and satisfaction.

- Implementing research results to integrate stakeholder relationships within the organization resource base, industry setting and socio-political arena into a single analytical framework.

The milestones of the research are:

- Defining stakeholder model in food industry.

- Identifying stakeholder interests.

- Developing methods to satisfy stakeholder needs and interests.

- Conducting a survey to identify stakeholder interests.

- Applying research results to update organization relationships with all stakeholders and groups of stakeholders.

**Developing original compensation systems** based on work motivation research, which takes into account regional and national organization quality culture in food process "From farm to Fork", is a scientific issue. The system helps workers to strive for quality, punctuality, and positive job attitude.

So far constituents improving quality are loose, not integrated, and, frequently, ineffective, thus it is necessary to develop **a system for TQM, EFQM Excellence Model, ISO 9000 family quality management standards, HACCP,**

### **FDIS 22000:2005 ISO standards and technology integration.**

The **research of society networking** is a part of methodology implementing TQM, vital element to overall result of any incentive. Society networking expands, deepens and strengthens quality management infrastructure in food chains.

Methods and recommendations to expand, deepen and strengthen society networking (infrastructure to implement TQM) in food production chains are worked out in these stages:

- To find peculiarities of implementing TQM in food production chain.
- To carry out analysis of existing infrastructure to implement TQM in a food production chain.
- To develop recommendations to expand, deepen and strengthen society networking (i.e. infrastructure to implement TQM) in food production chains.
- To develop methods to work out an infrastructure to implement TQM in food production chains.

Complete, precise and up to date knowledge in quality management creates integrated scientific and technological bases to develop food production and distribution chain of safer, healthier and more varied products, and raises competitiveness of European companies on world market.

### **Conclusions**

Results of the research of quality management development tendencies in the XXI century and the European Quality Management Vision evidence the necessity to integrate quality management with technological and engineering research to ensure food safety in "From Farm to Fork" process.

The following main quality management research areas, objectives and tasks to be integrated with the research in technological, engineering and other areas to ensure "From Farm to Fork" food safety and quality are:

- Minimizing the gap between organizational culture and quality culture in companies, which have already implemented Quality Management Systems according to ISO 9000 quality management standards and identifying the ways

for quality management systems to evolve into TQM systems in all food production companies;

- Developing methods of satisfaction of interested parties (customers, owners, people in a company, suppliers, bankers, unions, public partners);
- Developing original compensation systems based on work motivation research, which take into account regional and national organizational quality culture in "From Farm to Fork" food process and help workers to strive for quality, punctuality, and positive job attitude;
- Developing the system for TQM, EFQM Excellence Model, ISO 9000 family quality management standards, HACCP, FDIS 22000:2005 ISO standards and technological integration.

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## Management of Anti-Erosion Soil Protection

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### Abstract

The aim of the article is to develop a model of management of soil protection against erosion for the areas endangered by erosion together and to indicate the source of its financing. To achieve that goal the ways of obtaining financial means for anti-erosion soil protection by municipalities and counties were analysed.

The research was held in two municipalities: Miechów and Wiśniowa in Malopolska Voivodship in the period between 2002 and 2005. Own qualitative analysis prevails in the research. In the areas chosen for research it appeared that the municipalities did not run any tasks within anti-erosion soil protection. The starosts (in the counties) did not run any significant tasks within that protection although the dangers are fairly big, especially in Miechów Municipality. The results of the research allow a claim that counties and municipalities do not have any possibilities to obtain outside financing directly including the EU funds to provide for soil protection against erosion. The only possibility to obtain means from EU funds for anti-erosion soil protection are the means supposed for integrating the lands. Currently the organs responsible for anti-erosion soil protection (municipalities, counties, self-governing voivodships, voivods, and the Minister for Agriculture and Rural Development) create an inefficient and dispersed system. On the basis of the analysis held, an efficient model of anti-erosion soil protection management was worked out. The results allow a statement that on the basis of environment protection programmes one may introduce an efficient model of anti-erosion soil protection management.

The research hypothesis is an assumption that there is no efficient model of anti-erosion soil protection management and municipalities and counties do not have any possibility to obtain outside financing directly for the given tasks of anti-erosion soil protection.

**Key words:** erosion, management, soil protection.

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### Introduction

In Poland the organs responsible for anti-erosion soil protection (municipalities, counties, self-governing voivodships, voivods, and the Minister for Agriculture and Rural Development) create an inefficient and dispersed system. The above organs do not co-operate within performing tasks of anti-erosion soil protection. It happens quite often that public administration organs do not know the tasks of other organs concerning the protection. Therefore their actions are dispersed and do not bring expected results.

At the level of the municipality, soil protection against erosion has simply become laying out the areas endangered by erosion, which is later included in the following documents: the study of conditions and directions of spatial development and the local plan of spatial development. They

encompass suggestions concerning anti-erosion actions. However, municipalities do not have instruments for making the measures performed. What is more, the starost, as the main organ of anti-erosion soil protection, does not often know the decisions mentioned above. In such a case the statements in the study and in the local spatial development plan are often not put into practice.

The starost holds particular instruments of anti-erosion soil protection like: afforesting areas, planting trees or shrubs on the grounds, establishing permanent greenery areas, keeping the anti-erosion and detailed drainage devices in the state of technical efficiency. The starost may use the above mentioned instruments by issuing an administrative decision for a given person or a given case. However, not knowing the matter in the local plan of spatial development, the starost does

not use his prerogatives fully. What is more, the starost holds the prerogative of inspecting the execution of the obligation of implementing anti-erosion measures.

Other administrative organs – self-government voivodships, voivods, and the Minister for Agriculture and Rural Development – may execute individual tasks within soil protection against erosion. Self-government voivodships administer the means of the local Fund for Agricultural Land Protection including, among others, those for counteracting soil erosion on agricultural land and keeping the anti-erosion devices in the state of technical efficiency. Voivods and the Minister for Agriculture and Rural Development are responsible for inspecting the duties of performing the anti-erosion measures.

Two municipalities in Małopolskie Voivodship (Small Poland Region – south Poland) were chosen for a detailed research: Municipality of Miechów (Miechów County), which is an urban-rural municipality situated at the north of the voivodship and Wiśniowa Municipality (Myślenice County), which is a rural municipality situated at the south of the voivodship. The research was held in those municipalities in the period from 2002 until 2005. In those municipalities there exist dangers of soil erosion which create a serious problem while shaping their rural areas. The empirical research tried to answer the question which system of anti-erosion soil protection was used by the current organs of public administration responsible for that protection and what kind of possibilities the municipality or the county had to obtain financial means for the tasks of anti-erosion soil protection. That is why qualitative analysis prevails in the article.

The source materials were the following documents: the Program of Sustained Development and Protection of Environment of Małopolskie Voivodship for the years 2001-2015 (Programme of Małopolskie Voivodship, 2000); Programme of Environment Protection for the Town and Municipality of Miechów for the years 2004-2015 (Miechów Community Programme, 2004); Programme of Environment Protection for Wiśniowa Municipality for the years 2004-2015 (Wiśniowa Municipality Programme, 2004); the EU Operational Sector Programme – restructuring and modernisation of nutritional sector and development of rural areas in the period 2004-2006; the Plan of Rural Areas Development of

the EU for the years 2004-2006; the budgets and performed investment tasks of the analysed municipalities in the period 2002-2005. Moreover, interviews with employees, who take care of tasks within environment protection, municipal economy and investment.

The research hypothesis is an assumption that there is no efficient model of anti-erosion soil protection management and municipalities and counties do not have any possibility to obtain outside financing directly for the given tasks of anti-erosion soil protection. It is based on the analysis of legal documents, manuals of chosen EU aid programmes, and on observations of performing investment tasks and some farming management work which municipalities and counties run on rural areas.

## Results and discussion

The only documents which contain available information on soil erosion in the municipalities chosen for research are: the voivodship programme of environment protection and county programmes of environment protection.

Soil erosion in the area of Małopolskie Voivodship is one of significant factors degrading the agricultural land. The level of danger of strong water erosion of the area of central and southern part of Małopolskie Voivodship (about 29% of overall surface) belongs to the highest in the area of the country (Programme of Małopolskie Voivodship, 2000). Wind erosion endangers the counties of eastern and central Małopolska most. Canyon erosion is strongly differentiated spatially and appears mainly in loessic creations among other in the central part of Małopolska Highland. Małopolskie Voivodship has the most developed network of canyons where canyons appear in 53% of the area. The biggest area (25%) is taken by medium canyon erosion, 14% – by strong erosion, and in 1.5% of the area erosion is very strong. The area of the voivodship is included in the first level of protection urgency while management of canyons was considered as very urgent. In Cracow county, 5.9% of the overall surface area is endangered by very strong canyon erosion, which is the highest ratio in Poland. Almost the whole area of the Voivodship requires counteracting water surface or canyon erosion. In the area situated to the west of Cracow there is also a necessity to counteract wind erosion. In the Program of Sustained

Development and Protection of Environment of Małopolskie Voivodship for the years 2001-2015, in the chapter concerning the long run environment protection policy within particular elements of the environment and burdens, the creators did not foresee any tasks of anti-erosion soil protection until 2015. Similarly, in the chapter on the strategy of implementing the programme in the years 2001-2004 there is no word about anti-erosion measures.

In the chapter concerning the state and evaluation of the environment in the Programme of Environment Protection for the Town and Municipality of Miechów for the years 2004-2015 there is an analysis of the state of the earth surface (Miechów Community Programme, 2004). The subchapter "The main problems of the County in the area of the state of the earth surface" there is an inscription that one of the most important dangers degrading the earth surface is the surface water erosion. A considerable amount of land are situated on slopes with an average gradient over 6°. In such conditions there exists surface wash of the soil from slopes and its sedimentation at the foot of the slopes or at other places where there is a lower water flow velocity. The main climatic elements influencing water erosion are the volume and intensity of atmospheric fall and spring water runoff. What is more, canyon erosion is highly significant in the area of the county. In the chapter concerning aims and ways of realising the ecological policy of the county, in the subchapter "Soil protection" there is no single inscription about anti-erosion measures. In the last but one chapter of the Programme concerning the planned task to realise within environment protection there is a subchapter "The tasks within earth surface protection and the use of natural resources". This subchapter shows only one planned investment task within anti-erosion arable land protection during the whole time of the Programme, i.e. afforesting the lands endangered by erosion.

The analysis and the diagnosis of the environment in the Programme of Environment Protection for Myślenice County for the years 2004-2011 contain soils as well. There is an inscription in that chapter that due to a high slope gradient of the highland area there is a big problem of erosion in the county. Limiting the process of soil erosion should be realised through (Myślenice County Programme, 2004): changing the farmland-forest border, increasing the amount of for-

est ground and diminishing the area of rable lands, increasing the area of soil protecting forests, creating and maintaining midfield afforesting, changing arable land into green areas on the lands with the slope gradient between 10% and 20%, using soil protective crop rotation, using suitable farming technology, farmland use run with natural area predisposition, using cross-slope crops. In the schedule of task realisation there is one task within anti-erosion soil protection. It is working out a programme of midfield afforesting.

The tasks within anti-erosion soil protection accepted in the above programmes on the level of voivodships or counties prove no co-operation between public administration organs. To have these tasks performed efficiently one must have co-operation of those organs in the field of environment first of all (Hernik J., 2005b).

In the areas chosen for research in the analysed period there are no anti-erosion soil protection tasks run by municipalities. What is more, the starosts (counties) do not run any significant tasks within that protection although the dangers are high, especially in Miechów Municipality. County programmes for environment protection do not include concrete tasks within soil protection against erosion. In Miechów County, the lands endangered by erosion were planned to be afforested but no particular place or even municipality was given for those afforesting jobs. Working out midfield afforesting plans is planned in Myślenice County. Communal programmes of environment protection in the analysed municipalities do not contain any tasks within soil protection against erosion.

In the actual state there is a question which emerges why there are no concrete investment tasks of anti-erosion soil protection performed or even planned. First of all, the communities lack materials depicting the places of soil erosion danger. It is worth mentioning that reports giving places endangered by erosion in Poland have already been worked out. Secondly, there is no information about obtaining funds for running tasks connected with anti-erosion soil protection. In the situation when communal and county budgets do not foresee considerable financial means for realisation of those tasks there is a question what the chances are for using outside financing, particularly that originating from EU programmes.

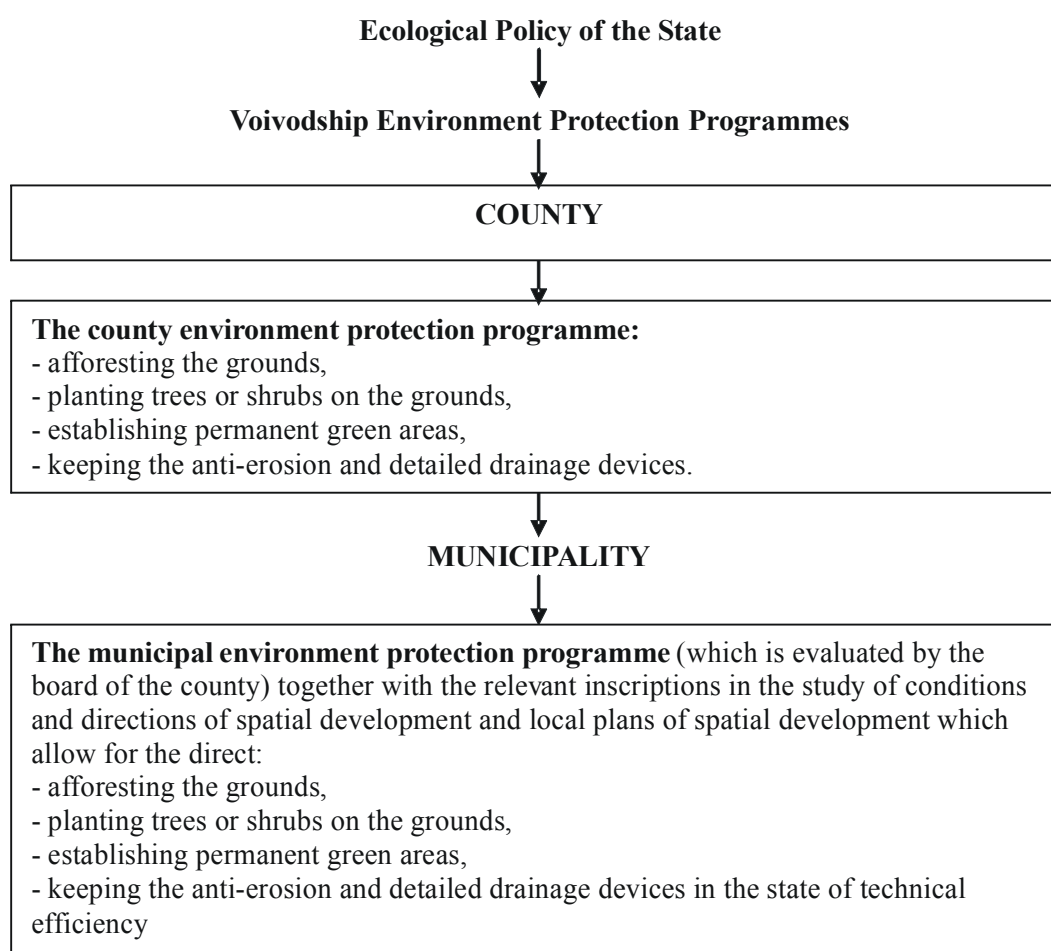
Two EU programmes were analysed: the Operational Sector Programme – restructuring and

modernising of nutritional sector and rural areas development 2004-2006, and the Plan for Rural Areas Development (Hernik J., 2005c).

The Operational Sector Programme – restructuring and modernising of nutritional sector and rural areas development 2004-2006 – contains ten activities: investment in farms, facilitating the start for young farmers, trainings and agricultural guidance, agricultural land integration, management of agricultural water resources, country renewal and protection of cultural heritage, differentiating agricultural activity, technical infrastructure connected to farming, restoring the forest production potential, processing and marketing of farm products. Out of those ten tasks the starost (county) and the municipality may obtain financial means for anti-erosion investment within the activity no. 5 – agricultural land integration. Within that activity, 100% qualified costs will be obtainable for realising the integration-replacement activities which may encompass anti-erosion

measures. The beneficiary of the means from that activity may be the county starost office. However, in that activity there should be a close co-operation between the county and the municipality so that the use of those means was possible. That is why it was said that the means may be used both by counties and municipalities.

On the other hand, the Plan of Rural Areas Development contains the following activities: structural pensions, support for low-commodity farms, support for areas with unfavourable farming conditions, agricultural-environmental programmes, afforesting agricultural lands, support for groups of agricultural producers, support for adjusting to EU standards, technical support. Out of these activities within the Plan of Rural Areas Development, counties and municipalities cannot obtain financial means for soil protection against erosion directly. However, indirectly they may influence farmers who would like to use: afforestation of agricultural land, support for areas



Source: the author's own analysis

Fig.1 A scheme of the suggested model of anti-erosion soil protection management

with unfavourable farming conditions, and agricultural-environmental programmes.

On the basis of the research held in two municipalities it was noticed that the starosts use their prerogatives within anti-erosion soil protection in a very small scale. The reason of that is first of all the lack of co-operation between public administration organs within environment protection together with anti-erosion soil protection as well. Environment protection including soil protection against erosion requires the existence of an efficient institutional frame in the field both on a central, regional and also on a local level.

Considering the obligation of having environment protection programmes on the level of municipalities, counties, voivodships and the whole country a new efficient model of anti-erosion soil protection management. (Hernik J., 2005a). In the suggested model, the organs of public administration will co-operate with each other in order to execute the tasks within anti-erosion soil protection most efficiently (see fig. 1). On the level of the whole country, The State Ecology Policy, and on the level of voivodships, Voivodship Environment Protection Programmes should be amended with a detailed description of the danger of soil erosion and tasks to realise should be planned within the scope with a division into counties and municipalities. Afterwards, inscriptions in the County Environment Protection Programmes should be introduced where detailed instruments of anti-erosion soil protection must be given: afforesting lands, planting trees or shrubs on the grounds, establishing permanent greenery areas, keeping the anti-erosion and detailed drainage devices in the state of technical efficiency. On the other hand, the Municipal Environment Protection Programmes should contain inscriptions on which plots-sites the detailed anti-erosion soil protection instruments will be used. In such a situation, the local spatial development plan of the municipality should and the study of conditions and directions of spatial development of the municipality should be compatible with the Municipal Environment Protection Programme.

## Conclusions

On the basis of the research held one may draw the following conclusions.

1. On the basis of environment protection programmes, one may implement an efficient

model of anti-erosion soil protection management. At that point, a co-operation of public administration organs within environment protection is necessary.

2. Having proper inscriptions in environment protection programmes, the local community together with landowners whose property is endangered by erosion will know about the planned measures in the area and about the sources of financing them. At that point, one may achieve a higher acceptance level for running anti-erosion tasks. It is important when the investment task is run within the subject, also when financed by outside sources.

3. Starosts, as the organ responsible for soil protection against erosion, do not run tasks within that protection.

4. Counties and municipalities do not have a direct possibility of obtaining outside financing for the tasks within anti-erosion soil protection including the use of EU means.

5. The only possibility of obtaining means from EU funds for anti-erosion tasks by counties and municipalities are the means offered for land integration.

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## Goals and Benefits of the Cooperation of Agri-Producers

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### Abstract

The article discusses goals and advantages of joint operation of agri-producers. Both theoretical premises and assistance available from the European Union recommend cooperation in view of the growing market competition. Opinions of farmers from the Malopolska region cooperating both before and after the accession to the EU demonstrate various benefits from joint operation, including better efficiency of market activities and upgrading members' knowledge.

**Key words:** group organization of agricultural market in the EU and Poland, reasons for joining agri-producer group, benefits of farmer cooperation in Malopolska Region, group objective.

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### Introduction

Joint operation of farmers may be a way of coping with growing market competition<sup>1</sup>. In Poland, the process of farmer group formation changed from obligatory collectivisation (before 1990, i.e. market transformation) to the present form of autonomous associations as producer groups or organisations. The process of producer group formation was legally regulated in 2000 when two laws were passed: *Act on agricultural producer groups and their unions and change of other acts* dated 15 September 2000 (Journal of Laws No. 88, item 983, 2000) and *Act on organizations on fruit and vegetable market, hop, tobacco and dry forage market* dated 29 November 2000 (Journal of Laws No. 3, item 19, 2001).

The reasons why farmers returned to organised forms of operation comprised among others the fact that small and medium-sized farms could not find customers for their produce therefore their viability and economic-organisational effectiveness were low. Small farms operating independently on the market rarely offer uniform commodity batches, face considerable problems trying to cope with seasonality of agricultural commodities and cannot afford proper promotion of

their products, so they are pushed out by bigger competitive foreign businesses. The situation requires substantial changes in the surrounding of Polish farmers, fruit and vegetable growers. Conditions of production changed as well as requirements of consumers and customers, market functioning and organisation. An old and well-known market rule is still valid: "one thing is certain – constant changes".

Because of considerable liberalisation of trade and opening borders for commodities from the European Union, Polish farmers must compete with well organised and equipped farmers from the western Europe. At the same time, if they want to be active market participants, they must face **the challenge of necessary eliminating the differences in functioning between the two markets in a relatively short period of time**. Initiated market changes are irreversible and the process of Poland's integration with the European Union countries demonstrates that necessary adjustments to current market requirements involve in the first place activities aimed at coping with growing European and global competition. In order to meet this challenge and satisfy the growing expectations of consumers and customers, pro-

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<sup>1</sup> More about competitiveness of producer groups towards market subjects operating individually in the article: Domagalska-Grędyś M., Efekty współpracy i postawy blokujące rozwój grupy producenckiej w warunkach konkurencji na przykładzie Małopolski (Effects of cooperation and attitudes impeding producer group development under competition on an example of Malopolska –in Polish) in: Zarządzanie przedsiębiorstwem w warunkach konkurencji, Maradki 19-20 maja 2005. Katedra Nauk Ekonomicznych, Wydział Nauk Ekonomicznych, Uniwersytet Warmińsko-Mazurski w Olsztynie.

ducers must observe obligatory rules of contemporary market organisation based rather on joint activities than on independent operation.

Current market needs show a necessity for efficient market activities including: consolidation of dispersed production, adjustment to market requirements, particularly in respect of quantity and quality (standardisation), improvement of production cost-effectiveness through reduction of production costs. It is important that in such case farmers may use the EU assistance (→ Assistance Programmes for Producer Groups<sup>2</sup>).

### Goals of farmer associations

One of the elements allowing to limit or eliminate the negative situation of farmers is their associating in formally legal or initially informal producer or marketing groups targeting at least:

- common acquisition of production inputs (possibly at wholesale prices, at a discount or as deferred payment after harvest);
- common acquisition and utilisation of specialist machinery and storage facilities;
- joining products from individual group members into larger batches of commodities, uniform in their quality and sort, sold to wholesalers, which would allow for negotiating a better price;
- lowering the costs of supply and sale through better transport utilisation;
- saving time (supplies to wholesalers);
- potential for constructing own customer network for a group (wholesalers, supermarkets, processing plants);
- possible modernisation of production technology and application of advances in biology (through proper selection of new more prolific cultivar varieties, exchange of the sowing and breeding material).

Objectives of producer groups derive from theory of groups which concerns widely understood worker teams. Edgar Schein [1998] among others assumes that groups have a common objective expressed as the kind of performed tasks and expected standards of their realization. Worker

producer groups most frequently form in order to realize some definite tasks, solve problems, make decisions or share information, unlike agri-producer groups which set themselves primarily economic goals, such as: joint sales to eliminate the intermediaries or decreasing production costs.

### Benefits of cooperation among producers

The benefits which each farmer may expect from the group and which group is able to guarantee include among others:

- lower prices for purchased production inputs;
- prolongation of payment dates for purchased inputs;
- obtaining higher prices for products sold;
- possible fast sale of produce and saving time;
- opportunity for opening up regular business contacts;
- access to specialist infrastructure which only a group is able to possess (e.g. sorting and washing, packing or transport, etc.);
- upgrading knowledge;
- improvement of financial fluidity and access to legal advice;
- distribution of risk, becoming recognisable on the market [Boguta, Ejsmont 2001].

Some definite structures and processes distinguishing the group strongly affect its members' behaviours and also stimulate them for activity and through realisation of planned tasks and objectives determine the results generated by the group as a whole [Žmija, Kuczek 2000]. The final result of teamwork is defined as so called **synergy law**. Synergy effect forms in result of mutually advantageous conjunction of a larger number of distinct elements to generate better results than when each was applied individually [Encyklopedia PWN 1995]. In practice, the law is often described as  $2+2=5$ , which denotes that the result of group work in relation to a single group member is better than the result possible to obtain by independent activity. This is among others determined by

<sup>2</sup> For example, assistance for agri-producer groups registered after 1 May 2004 in the frame of Rural Development Plan – to cover the costs of founding the organization and administrative costs in the first five years of its operation. Initial support for recognized producer groups, including financial assistance for group formation and facilitating its administrative activities in the first five years of its operation, financial assistance to cover investment costs planned when the group is gaining recognition. Support for recognized producer organizations, including means for operating fund and financial recompense for not designating fruit and vegetables for sale.

better production concentration, possible work distribution leading in consequence of better concentration of production, trade and services, more efficient utilisation of production means, and also better efficiency and quality of work, diminishing manufacturing, sale and supply costs, increase in the effectiveness of labour of persons acting in a group. Moreover, synergy effect means passing the threshold of activity efficiency as a result of group work. The threshold determines the minimum number of persons necessary to perform certain job [Żmija, Kuczek 2000].

Advantages of group operation, i.e. the benefits which may be achieved, are the basic question each farmer should pose before he joins a producer group. When acceding to a producer group he should be absolutely convinced that work in this particular group gives prospects of success in result of which he will benefit and the membership will prove "profitable for him" because the group is not just a simple sum of persons governed by specific motives.

Despite many benefits speaking for farmers teaming up, the present number of groups is low mainly due to generally negative experiences of "cooperation" gained in the past. Group activity is a challenge with which few people are able to cope. It requires completely new attitudes and skills from each group member [Zarudzki 2001].

### Region and method of investigations

Farmers' opinions about the reasons of their accession to the producer group and resulting benefits were compared in the frame of research conducted on three groups of the Malopolska region: Grodzisko, Łososina, and Olesno. Taking into account Poland's integration into the European Union and potential changes which might have influenced the producers' views, the article confronts opinions of Grodzisko and Łososina group members from 2003 and Olesno group members after integration into the EU in 2004. Interview questionnaire was used as a tool to conduct research among group members who were key informers.

### Characteristics of researched groups

"Grodzisko" Horticultural Cooperative at Raciechowice was founded in 1995. It operates according to the statute, which was amended in order to meet the requirements of the *Act on agricultural producer groups and their unions and amendments to other acts* of 15 September 2000

and the *Act on organizations on fruit and vegetable market, hop, tobacco and dry forage market* of 29 November 2000. The cooperative has 10 members. Its activities comprise mainly apple sales and also sales of pears, plums and raspberries. The fruit is produced on fruit farms of the Cooperative members. About 80% of the total produce is sold to fresh fruit market and 20% to processing plants. The Cooperative organises joint sales of fruit grown on the members' farms, develops marketing activities, finds sale markets and negotiates delivery contracts for dessert and industry apples, contracts with supermarkets, processing industries, and mediates entering into group contracts. It has acquired permanent customers in Carrefour, Auchan Poland and Ahold Poland supermarkets.

For several years now, Grodzisko Coop. members have been using Integrated Fruit Production (IFP), supervised by Experimental Unit at Brzezna and Pomology Institute at Skierniewice. All cooperative members have certificates of Integrated Fruit Producers.

"Łososina" Fruit Grower Cooperative has been operating on the market since 1995 when it became a legal personality. Its statute has been amended to meet the requirements of the acts on agri-producer groups and on the organisation of fruit and vegetable market. The new statute was registered at the National Court Register. The Cooperative groups **20 largest fruit growers** from the municipality, who produce fruit and supply it to the market. Economic activities of the Cooperative comprise mainly production and sale of apples and also pears, plums and sour cherries. The Cooperative maintains well-established business contacts with retail customers. For several years now, it has been trading with TYMBARK S.A. Fruit Processing Company and is also striving to open up contacts with REAL and DYSKONT PLUS hypermarket networks. At the same time the Cooperative sells fruit to small wholesale businesses in Krakow and Dębica and negotiates fruit sales with contractors in Russia, Ukraine and Slovakia.

The seat of "Olesno" Fruit and Vegetable Producer Group is Ćwikłów situated in the Olesno municipality (in the Malopolska region). The group operation on the market bases on its statute. It numbers **39 members** from the Olesno municipality. This producer group specialises mainly in production of strawberries and rasp-

berries and additionally trades in vegetables (tomatoes and cucumbers). The group provides also transport services and vegetable spraying.

## Results and discussion

Individual farmers face difficulties when trying to meet the market requirements. Therefore fruit growers who want to be equal partners for their fruit customers should organise themselves into producer groups. Main reasons for which the respondents joined the group comprised common sales, better prices and dates of payment (Table 1).

All fruit growers belonging to "Grodzisko" group unanimously declared that easier joint sales of products, more convenient prices, forms and dates of payment are the main reasons why they decided for cooperation.

Eleven members of "Łososina" group expressed similar opinions. Only one fruit grower pointed to regular and convenient access to sources of finance as the reason for his joining the Cooperative. Improvement in farm cost-effectiveness, increasing the amount of produce for sale or purchases of production inputs at wholesale prices were the reasons which fruit growers generally omitted and did

not consider determinants of their accession to the group.

Among opinions expressed by "Olesno" group members (after the EU accession), the dominant was the increasing negotiating power on the market (30% of answers), access to regular and convenient sources of financing (25%), improvement of farm cost-effectiveness (25%), and finally advances in technology (20%).

Apart from the reasons for joining the group, also the resulting benefits are important from the perspective of group activity efficiency. While joining the group, a farmer must be fully convinced that he will benefit from such cooperation and joint operation will contribute to increasing individual farmers' incomes. In cooperation the studied producers had an occasion to share experiences and obtained better prices for their products (Table 2).

The members of "Grodzisko" group chose only two of the eight benefits suggested in the questionnaire. According to 80% of the surveyed cooperative fruit growers, guaranteed product sale was the most important benefit of cooperation. The other 20% of farmers thought that owing to their membership in the group they were able to sell their products.

Table 1 / *Tabela 1*

**Reasons of accession to the producer group in per cent of answers\***  
***Powód wstąpienia do grupy producenckiej w % odpowiedzi \****

| Specification<br><i>Wyszczególnienie</i>                                                                        | Grodzisko                   |        | Łososina                    |        | Olesno                      |        |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------|--------|-----------------------------|--------|-----------------------------|--------|
|                                                                                                                 | Number<br><i>Liczebność</i> | %      | Number<br><i>Liczebność</i> | %      | Number<br><i>Liczebność</i> | %      |
| Easier joint sales<br><i>Łatwiejszy wspólny zbył</i>                                                            | 10                          | 100.00 | 11                          | 78.58  | 0                           | 0.00   |
| Access to regular and convenient sources of finance<br><i>Uzyskanie stałych i dogodnych źródeł finansowania</i> | -                           | -      | 1                           | 7.14   | 5                           | 25.00  |
| Access to market information<br><i>Dostęp do informacji rynkowej</i>                                            | -                           | -      | 1                           | 7.14   | -                           | -      |
| Advances in science and technology<br><i>Rozwój techniczny, technologiczny</i>                                  | -                           | -      | 1                           | 7.14   | 4.00                        | 20.00  |
| Better negotiating power on the market<br><i>Zwiększenie siły przetargowej na rynku</i>                         | -                           | -      | -                           | -      | 6.00                        | 30.00  |
| Improved cost-effectiveness of member farms<br><i>Poprawa rentowności gospodarstw w organizacji</i>             | -                           | -      | -                           | -      | 5.00                        | 25.00  |
| Total:                                                                                                          | 10                          | 100.00 | 14                          | 100.00 | 20                          | 100.00 |

\* Respondents could choose more than one answer. \* *Respondenci mogli udzielić więcej niż jedną odpowiedź.*

Source / *Źródło* : own studies / *badania własne.*

Table 2 / Tabela 2

**Benefits from accession to producer group in per cent of answers\***  
**Korzyści z przystąpienia do grupy producenckiej w % odpowiedzi\***  
**Specification Wyszczególnienie**

| Specification<br>Wyszczególnienie                                                                | Grodzisko            |        | Łososina             |        | Olesno               |        |
|--------------------------------------------------------------------------------------------------|----------------------|--------|----------------------|--------|----------------------|--------|
|                                                                                                  | Number<br>Liczebność | %      | Number<br>Liczebność | %      | Number<br>Liczebność | %      |
| I will sell all I produce<br><i>Sprzedam to, co wyprodukuję</i>                                  | 2                    | 20.00  | 1                    | 7.14   | 14                   | 20.00  |
| I am sure I will sell my products<br><i>Uzyskuję pewność zbytu produktów</i>                     | 8                    | 80.00  | 7                    | 50.02  | 6                    | 8.57   |
| I can buy production inputs cheaper<br><i>Taniej nabywam środki produkcji</i>                    | -                    | -      | 1                    | 7.14   | 14                   | 20.00  |
| I make use of technological progress<br><i>Korzystam z postępu technologicznego</i>              | -                    | -      | -                    | -      | -                    | -      |
| I obtain higher prices for my products<br><i>Uzyskuję wyższe ceny za swoje produkty</i>          | -                    | -      | 3                    | 21.42  | -                    | -      |
| I can share experiences<br><i>Wymieniam doświadczenie</i>                                        | -                    | -      | 2                    | 14.28  | 14                   | 20.00  |
| I have easier access to loans<br><i>Mam łatwiejszy dostęp do kredytów</i>                        | -                    | -      | -                    | -      | 8                    | 11.43  |
| I have a better access to market information<br><i>Mam szerszy dostęp do informacji rynkowej</i> | -                    | -      | -                    | -      | 14                   | 20.00  |
| Total:                                                                                           | 10                   | 100.00 | 14                   | 100.00 | 70                   | 100.00 |

\* Respondents could choose more than one answer. \* Respondenci mogli udzielić więcej niż jedną odpowiedź.

Source / Źródło: own studies / badania własne.

Members of “Łososina” group chose five out of the suggested answers. Similarly as in “Grodzisko”, the assurance of their commodities sale was the most important benefit of joint operation. About 21% of “Łososina” group members obtained higher prices for their products, whereas ca. 14% had easier access to credits. Owing to joint activities, ca. 7% of fruit growers from this group sold all fruit they produced. The same number was also buying cheaper production inputs.

Two benefits: “I will sell all I produce” (20% of answers), “I can share experiences” (20%) prevailed also among the opinions of “Olesno” group members after the EU accession. These group members also chose two other opinions: “I have a better access to market information” (20%) and “I have a better access to loans” (11.43% of answers).

Generally, farmers face difficulties with sales of their products, so while operating in group they may be sure they would sell all produced fruit, they have access to important market information and sources of funding for their activity (from the EU assistance funds for producer groups).

### Conclusion, proposals, recommendation

The conducted research confirms that reasons and benefits of fruit producer joint operation are compatible. The reasons for acceding to the group mentioned by the studied farmers comprise mainly: easier joint sales, better prices, more convenient forms and dates of payment. The benefits which the surveyed achieved confirmed their expectations. According to the studied fruit growers of “Grodzisko” and “Łososina” groups (before the EU accession), guaranteed sales of their products was the most important benefit derived from the cooperation. After the EU accession, fruit growers associated in “Olesno” group as equally important benefits from the cooperation considered better access to market information, sharing experiences, cheaper production inputs, and access to financial means.

Theoretical benefits from group operation and the opinions expressed by the associated producers confirm a thesis that in view of the growing difficult market competition only

group operation provides a chance for agri-producers' success on the market in Poland and other countries. The former EU countries may serve as an example where farms join the market mainly through producer organizations and groups. The EU allocates the major part of funding for producer organizations (PO), encouraging them for joint activities. There are 1341 producer organizations in the European Union with 450 thousand members, which have about 50% share in the fruit and vegetable sales market [Chazoule, Domagalska-Gredys, Pluvineage, 2005].

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### Streszczenie

*Działanie zespołowe rolników może być formą radzenia sobie w narastającej konkurencji rynkowej. W Polsce proces łączenia się rolników przybierał formy od przymusowej kolektywizacji (przed 1990 rokiem tj. urynkowaniem gospodarki) do współczesnej formy dobrowolnego zrzeszania w ramach grup i organizacji producenckich. W 2000 roku uregulowano proces tworzenia się grup producenckich wprowadzając w życie dwie ustawy: z dnia 15 września 2000 r. O grupach producentów rolnych i ich związkach oraz zmianie innych ustaw (Dz. U. Nr 88, poz. 983 z 2000 r.) oraz z dnia 29 listopada 2000 r. O organizacji rynku owoców i warzyw (Dz. U. Nr 3, poz. 19 z 2001 r.). Przyczynami powrotu do zorganizowanych form działania rolników były m.in. argumenty, iż w gospodarce rynkowej indywidualne, małe i średnie gospodarstwa nie znajdują stałych odbiorców na wyprodukowane towary, a rentowność i efektywność ekonomiczno-organizacyjna tych gospodarstw jest niska.*

*Artykuł dotyczy celów i korzyści wynikających z działania zespołowego producentów rolnych. W ramach przeprowadzonych badań wśród trzech grup producenckich województwa małopolskiego: Grodziska, Łososiny i Olesna, porównano opinie na temat powodów wstąpienia do grupy i korzyści z tego wynikających. Uwzględniając wejście Polski do UE i ewentualne zmiany, które mogły wpłynąć na opinie producentów w artykule skonfrontowano opinie członków Grodziska i Łososiny z roku 2003 i grupy Olesno po wejściu*

do UE w 2004 roku. Jako narzędzie badawcze wykorzystano kwestionariusz wywiadu, przeprowadzony wśród członków, będących kluczowymi informatorami grup.

Przeprowadzone badania potwierdzają, że powody i korzyści działania grupowego producentów owoców są podobne. Powodem przystąpienia do grupy badanych rolników są głównie: łatwiejszy wspólny zbyt, korzystniejsze ceny, formy i terminy płatności. Korzyści jakie uzyskali badani respondenci potwierdzają oczekiwania. Według badanych sadowników (przed wejściem do UE) Spółdzielni „Grodzisko” i „Łososina” uzyskanie pewności zbytu produktów było najważniejszą korzyścią

współpracy. Po wejściu do UE opinia sadowników „Olesna” wyrażała podobne korzyści ze współpracy w tym głównie: z szerszego dostępu do informacji rynkowej, wymiany doświadczeń, tańszych środków produkcji i dostępu środków finansowych.

Zarówno przesłanki teoretyczne jak dostępne formy wsparcia unijnego przemawiają na korzyść współdziałania w kontekście nasilającej się konkurencji rynkowej. Opinie rolników województwa małopolskiego współpracujących przed i po wstąpieniu do Unii wskazują na różnorodne korzyści działania zespołowego, dotyczące m.in. poprawy skuteczności działania na rynku jak również poszerzenia wiedzy członków.

## Factor Analysis of Indexes for the Harvest Change of Agricultural Plants

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### *Abstract*

In this article theoretical and practical aspects of factor index analysis are examined. On the basis of the index theory the main principles of application of this method and problems are formulated. Considerations how to harmoniously join the forms of absolute and index analysis are mentioned, and the problem of choosing weighted price indexes is discussed.

Grain we can get from different cereals and pulses; winter and summer wheat, winter rye, barley oats and others. The total harvest of the grain is a sum of different grain crops. The yield of the grain crops by year and crops differs. Some of them – winter wheat, winter barley, summer wheat, winter hybrid of rye and wheat are more productive – the yield per hectare is about 4 tons, but others – especially pulses for grain are not too much productive. There are big differences in the areas of grain crops and in their percentage in the total area of grain crops. The harvest of each grain crop depends on the area and yield per hectare. But the total amount harvest of all grain crops depends not only on each grain crop area, the yield per hectare but also on the structure of the grain crops and their

The farmer's aim is to have such structure of the crops, which gives the maximum benefit, in our case the maximum total harvest of grain. The influence of the structure of the area in the total harvest of homogeneous plants change should be evaluated by objective criteria's. The most important of them is the growing of total harvest. In the statistical analysis it is important not only to define the change of the total harvest but also identify the factors and the influence of each of them. There is used factor analysis of indexes.

On the basis of summarized information about the areas of grain crops, crop harvest and yield in Lithuania during the period of 2000-2004, possibilities of applying an index method is shown. Calculations show that the index method may be applied successfully for the calculation of harvest of both separate grain crops and all grain crops, as well as the impact of factors influencing it. While analyzing the change of harvest of agricultural plants, individual and aggregate indexes may be calculated. The individual ones are applied to analyze the harvest of a single plant, while the aggregate indexes are used in the group of the same sort of plants (homogeneous). The use of indexes allow us to calculate not only a relative but also an absolute change of total crop harvest and to determine the magnitude of factors which influenced this change, expressed in absolute and relative indexes. In this case the index of areas under crops of fixed composition and the index of yield are helpful. Having the data of several years base and chain indexes may be calculated; thus an analysis may be very exhaustive. The advantage of indexes is the easiness of comprehensiveness and calculation. The index method may be applied not only for the analysis of the change of harvest (and factors which influence it) of grain crops, but also of other homogeneous plants (for instance, vegetables, forage plants) When applying this method to the analysis of total harvest of forage plants, it is essential to use coefficients of forage nutrition.

**Key words:** factor analysis, indexes, crop area, yield per hectare, total harvest.

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### Introduction

Statistical indexes are one of the most universal methods of statistical analysis. From the point of view of statistical researchers, the first descrip-

tion of statistical indexes as a method was printed by a French scientist Charles Dutot in 1738. Similarly to other statistical methods, the method of indexes appeared due to practical needs – in trade pecuniary relations people needed to calculate

prices and analyze their dynamics. Therefore, at first price indexes were calculated. At the beginning they were applied only to determine relative changes and later also to determine changes in absolute quantities. At the beginning of application of indexes, aggregate indexes were calculated taking the weight of the period under review, rather than individual indexes, which are simpler according to the method of calculation. Factor analysis of indexes does not have such a long history. This kind of research appeared in XX century due to the need to determine which part of the total increase of number is made by the change of different factors. Contemporary theory of indexes allows us to apply them in business, trade and administration. By using indexes it is possible to establish the absolute and relative change of various economic phenomena, and to calculate the magnitude of factors, influencing the change.

The object of this research is total crop harvest. A hypothesis is formed to check whether the index method may be applied to determine the impact of total crop harvest of homogeneous plants and the factors which influence it. The aim of this study is to show possibilities of the index method in order to determine the changes of total harvest of grain crops and calculate the magnitude of factors which influence it. The following tasks are set in this study: to discuss theoretical aspects of the calculation and application of statistical indexes; to describe the indexes used in the study; to determine the change of total crop harvest and to calculate the magnitude of factors which influence it; to provide generalisations and recommendations.

In this article scientific literature on the subject concerned is used. Factor index analysis is based on the official information on the crop harvest in the period 2000–2004, taken from the Department of Statistics. The results of the study are provided in tables. At the end of the article conclusion and generalisations are provided.

## Results and discussion

Factor analysis of indexes is based on a few general principles and raises certain problems: not indexes themselves, but their systems are analyzed; not only indexes as relative quantities, but also absolute changes of indexes are calculated and analyzed; as well as the impact of factors influencing them; how to join harmoniously two forms

of analysis: relative and absolute indexes, the problem of index\_weight is related with economic origin of the process analyzed.

The essence of factor analysis of indexes is that an index of certain amount of content is expanded between two – quality and quantity, in other words, it is a simple multiplicative model, namely

$$(1) \quad x = ab,$$

here  $x$  – result index,  $a$  or  $b$  – factors, which determine the result index.

The same kind of relation exists between indexes:

$$(2) \quad I_x = I_a \cdot I_b.$$

The models of this kind are called systems of indexes. In the simplest model there are two factor indexes and one result index. It is essential to find out if there is a causal relationship between them. This makes us search for the sense of economic content of indexes. Knowing the interrelationship of economic phenomena, we may undoubtedly state that if we divide total crop harvest by area under crops, we may calculate the average yield, hence total crop harvest is calculated as the multiplication of area under crops and yield.

If we mark the yield of separate grain crops by letter  $d_i$ , and the area under crops  $N_i$ , then the total harvest of separate grain crops is calculated as the multiplication of these two indexes  $d_i N_i$ , and the total harvest of all grain crops is calculated as the sum of harvest of separate grain crops–

$$\sum_{i=1}^n d_i N_i.$$

Hence:

$$(3) \quad i_{dN} = i_d \cdot i_N,$$

where  $i_d$  – indexes of the yield of separate grain crops of variable composition,  $i_N$  – indexes of variable composition areas of separate grain crops.

Indexes  $i_d$  and  $i_N$  are calculated as ratios of certain indexes of a base year and a year under review:

$$(4) \quad i_d = \frac{d_1}{d_0} \quad \text{ir} \quad i_N = \frac{N_1}{N_0}.$$

The indexes of harvest of separate grain crops  $i_{d_i N_i}$  are calculated in the following way:

$$(5) \quad i_{d_i N_i} = \frac{d_{i1} N_{i1}}{d_{i0} N_{i0}}.$$

The aggregate index of the harvest of all grain crops is calculated according to the following formula:

$$(6) \quad I_{dN} = \frac{\sum_{i=1}^n d_{i1} N_{i1}}{\sum_{i=1}^n d_{i0} N_{i0}}.$$

The aggregate index of harvest is calculated by multiplying the index of stable (fixed) composition of the area under crop plants and the index of crop yield;

$$(7) \quad I_{dN} = \frac{\sum_{i=1}^n N_{i1} d_{i0}}{\sum_{i=1}^n N_{i0} d_{i0}} \cdot \frac{\sum_{i=1}^n d_{i1} N_{i1}}{\sum_{i=1}^n d_{i0} N_{i1}}.$$

It is obvious from this formula that total harvest depends on the yield of separate grain crops and the change of their area, therefore the changes may be estimated as the reason of change of the total crop harvest. However, the statement about the existing causal relationships has to meet certain conditions. In fact, the changes of total grain crop harvest may be determined by a lot of reasons, directly unrelated with the changes of the area under separate grain crops and their yield. Algebraic multiplication  $dN$  means that all other reasons are somehow included into the factors indicated – the yield of grain crops and the area under crops, although sometimes we cannot indicate exactly which reason influences some factors in a digital form. Therefore, even in the simplest multiplicative model we have to abstract from the majority of circumstances which are sometimes significant. The method of abstraction is frequently applied in the theory of indexes because

by making any index we eliminate the impact of other factors – “what would happen if...”

Indexes may be treated as an instrument of analysis when determining the impact of factors on the result index. In the models of indexes we may never find a statement that only these two factors (in our case – the area under crops and the yield) totally determine the change of the result index (of total crop harvest). Therefore, the choice of index formula (form) has a very significant practical meaning and the choice cannot be made barely on the basis of mathematical speculations. In order to make a choice we need to formulate the aims of research and do the analysis of a concrete economic task.

The total harvest of grain crops is determined by three factors:

- 1) the area under crops (quantitative);
- 2) the yield (qualitative);
- 3) the structure of the area under crops (structural).

The “units” which are in the sum of a numerator and a denominator of an index have a certain economic content – in our case it is the total harvest of crops.

In order to determine the change of a result index, we face an additive model because of the amount of impact of many factors, because:

$$(8) \quad \Delta = x_1 + x_2 + \dots + x_k.$$

In other words, the sum of absolute changes due to different factors ( $j=1,2,\dots,k$ ) equals the total change of the result index. The additive model clearly defines causal relationships among factors (causes) and the consequences of the result index.

In our case

$$(9) \quad \Delta_{d_i N_i} = \Delta_{d_i} + \Delta_{N_i} = (N_{i1} d_{i1} - N_{i1} d_{i0}) + (N_{i1} d_{i0} - N_{i0} d_{i0})$$

If we assume that one year after another an area of grain crops did not change, then the difference  $(N_{i1} d_{i0} - N_{i0} d_{i0})$  will show this advantage – an increase of harvest, which occurred due to the change of the yield of different grain crops. For this we need information about the size of the area under crops for the year under review. On the other hand, if we want to calculate perspective total harvest of grain crops according to this formula,

we also need to take into consideration other factors, first of all the structure of the areas under crops, which formed after the change of yield of various grain crops, because undoubtedly, the changes of yield make farmers optimize the structure of the area under crops. The impact of the size of the area under separate grain crops and its structure on the changes of total harvest of crops is calculated in difference  $(N_{i1}d_{i0} - N_{i0}d_{i0})$ .

The total change of the harvest of all grain crops is formed as the sum of changes of crop harvest of separate grain crops:

$$(10) \Delta_{Nd} = \sum_{i=1}^n N_{i1}d_{i1} - \sum_{i=1}^n N_{i0}d_{i0}.$$

This change is formed as the sum of changes due to different factors (areas and yield):

- Due to the change of yield

$$(11) \Delta_d = \sum_{i=1}^n N_{i1}d_{i1} - \sum_{i=1}^n N_{i1}d_{i0}$$

- Due to the size of areas and the change of their structure

$$(12) \Delta_N = \sum_{i=1}^n N_{i1}d_{i0} - \sum_{i=1}^n N_{i0}d_{i0}$$

- From this number only due to the change of the structure of areas

$$(13) \Delta_N = \sum_{i=1}^n N_{i1}d_{i1} - \bar{d}_0 \sum_{i=1}^n N_{i1}$$

When we compare the data of 2004 about the areas of grain crops and their yield to the base data of 2000, we calculate how the total harvest of grain crops changed:

Table 1

**Areas and yield of grain crops grown in Lithuania**  
(*Žemės ūkio augalų pasėliai, derlius ir derlingumas 2004*)

| Grain crops                    | Area (housand ha) |       |       |       |       | Yield (housand/ha) |      |      |      |      |
|--------------------------------|-------------------|-------|-------|-------|-------|--------------------|------|------|------|------|
|                                | 2000              | 2001  | 2002  | 2003  | 2004  | 2000               | 2001 | 2002 | 2003 | 2004 |
| Winter wheat                   | 285.5             | 269.7 | 266.7 | 283.2 | 306.7 | 3.56               | 3.32 | 3.84 | 3.61 | 4.12 |
| Winter hybrid of rye and wheat | 29.1              | 41.6  | 40.5  | 66.1  | 75.9  | 2.77               | 2.57 | 2.82 | 2.75 | 3.18 |
| Winter rye                     | 133.1             | 110.5 | 74.6  | 59.8  | 55.5  | 2.34               | 2.09 | 2.28 | 2.46 | 2.53 |
| Winter barley                  | 1.2               | 2.8   | 6.9   | 13.0  | 4.6   | 2.25               | 2.64 | 3.00 | 2.67 | 3.76 |
| Summer wheat                   | 84.9              | 68.1  | 68.4  | 53.3  | 48.4  | 2.62               | 2.64 | 2.82 | 3.40 | 3.45 |
| Summer barley                  | 352.0             | 328.5 | 358.1 | 295.3 | 287.9 | 2.43               | 2.34 | 2.37 | 2.93 | 2.93 |
| Summer hybrid of rye and wheat | 21.7              | 18.0  | 15.5  | 12.4  | 8.0   | 2.31               | 2.04 | 1.99 | 2.64 | 2.71 |
| Oat                            | 44.3              | 47.6  | 55.0  | 48.2  | 52.8  | 1.87               | 1.77 | 1.77 | 2.38 | 2.23 |
| Buckwheat                      | 16.6              | 16.9  | 17.0  | 16.3  | 22.0  | 0.89               | 0.75 | 0.62 | 0.90 | 0.59 |
| Cereal mixture for grains      | 11.0              | 11.1  | 12.4  | 14.3  | 15.2  | 1.80               | 1.78 | 1.49 | 2.00 | 2.08 |
| Other summer crops             | 0.2               | 0.4   | 2.9   | 2.7   | 1.5   | 4.00               | 2.75 | 2.86 | 3.22 | 2.07 |
| Peas and their mixtures        | 25.2              | 20.3  | 18.4  | 7.4   | 11.5  | 1.97               | 1.48 | 2.01 | 2.92 | 1.91 |
| Beans                          | 1.4               | 2.2   | 3.2   | 1.8   | 2.3   | 1.93               | 1.86 | 1.25 | 2.50 | 2.30 |
| Vetch and their mixtures       | 10.0              | 9.5   | 9.9   | 2.2   | 1.4   | 1.68               | 1.51 | 1.54 | 1.91 | 1.43 |
| Lupine                         | 1.9               | 1.5   | 1.6   | 2.0   | 2.6   | 0.84               | 1.00 | 1.06 | 1.40 | 1.08 |
| Other leguminous crops         | 1.3               | 1.2   | 3.1   | 8.2   | 12.7  | 1.69               | 1.92 | 1.58 | 1.88 | 2.00 |
| Total (average)                | 1019.4            | 949.9 | 954.2 | 886.2 | 909.0 | 2.68               | 2.52 | 2.73 | 3.02 | 3.21 |

■ due to the change of yield of separate grain crops:

$$171.5+31.5+10.7+7.0+40.0+142.9+3.2+19.0-6.6+4.2-2.9-0.7+0.9-0.4+0.6+3.9 = 424.9 \text{ thousand. t.}$$

Our calculation are presented in the table 2.

As we may see, the impact of yield of some grain crops (winter wheat, winter hybrid of rye and wheat, winter barley, oat, buckwheat, cereal mixture for grains, other summer crops, beans, lupine and other leguminous crops) influenced the total harvest in a positive way, i.e. increased it, while the impact of other grain crops, on the contrary, decreased the harvest.

■ Due to the areas of separate crop plants and the change of their structure:

$$76.5+129.5-181.5+7.7-95.5-157.3-31.7+15.8+4.9+7.6+5.2-27.0+1.7-14.4+0.6+19.3 = -238.7 \text{ thousand. t.}$$

We may draw a conclusion that in 2004, if compared to 2000, the changes of size and structure of areas under crops reduced the total harvest even by 238700 t.

■ Only due to the impact of the structure of the area:

$$269.8+6.8-18.9-2.0-2.9-72.0-3.0-42.8-39.4-13.4+2.0-8.2-1.7-1.4-4.8-12.6=55.8 \text{ thousand. t.}$$

Thus, although the structure of areas in 2004 was more rational, this did not compensate a negative decrease of areas of some grain crops (winter rye, summer wheat).

Base indexes alone do not always allow us to evaluate the extent of changes of the index analyzed. If we calculate only base indexes (base is year 2000), then we have to draw a conclusion that in all following years except for 2004, the total harvest of grain crops decreased, in relation to the base. However, from the chain indexes we may

Table 2

**The harvest of grain crops and the absolute change of harvest in Lithuania**

| Grain crops                    | Harvest (housand t) |        | The absolute change of harvest (housand t) |                      |                     |                                          |
|--------------------------------|---------------------|--------|--------------------------------------------|----------------------|---------------------|------------------------------------------|
|                                | 2000                | 2004   | total                                      | due to the change of |                     | only due the structure<br>$\Delta_{str}$ |
|                                |                     |        |                                            | areas<br>$\Delta_N$  | yield<br>$\Delta_d$ |                                          |
| Winter wheat                   | 1015.3              | 1263.4 | 248.1                                      | 171.5                | 76.6                | 269.9                                    |
| Winter hybrid of rye and wheat | 80.7                | 241.7  | 161.0                                      | 31.5                 | 129.5               | 6.8                                      |
| Winter rye                     | 311.4               | 140.6  | -170.8                                     | 10.7                 | -181.5              | -18.9                                    |
| Winter barley                  | 2.7                 | 17.3   | 14.6                                       | 7.0                  | 7.7                 | -2.0                                     |
| Summer wheat                   | 222.3               | 166.8  | -55.5                                      | 40.0                 | -95.5               | -2.9                                     |
| Summer barley                  | 856.9               | 842.5  | -14.4                                      | 142.9                | -157.3              | -72.0                                    |
| Summer hybrid of rye and wheat | 50.2                | 21.7   | -28.5                                      | 3.2                  | -31.7               | -3.0                                     |
| Oat                            | 82.9                | 117.7  | 34.8                                       | 19.0                 | 15.8                | -42.8                                    |
| Buckwheat                      | 14.7                | 13.0   | -1.7                                       | -6.6                 | 4.9                 | -39.4                                    |
| Cereal mixture for grains      | 19.8                | 31.6   | 11.8                                       | 4.2                  | 7.6                 | -13.4                                    |
| Other summer crops             | 0.8                 | 3.1    | 2.3                                        | -2.9                 | 5.2                 | 2.0                                      |
| Peas and their mixtures        | 49.7                | 22.0   | -27.7                                      | -0.7                 | -27.0               | -8.2                                     |
| Beans                          | 2.7                 | 5.3    | 2.6                                        | 0.9                  | 1.7                 | -1.7                                     |
| Vetch and their mixtures       | 16.8                | 2.0    | -14.8                                      | -0.4                 | -14.4               | -1.4                                     |
| Lupine                         | 1.6                 | 2.8    | 1.2                                        | 0.6                  | 0.6                 | -4.8                                     |
| Other leguminous crops         | 2.2                 | 25.4   | 23.2                                       | 3.9                  | 19.3                | -12.6                                    |
| Total                          | 2730.7              | 2916.9 | 186.2                                      | 424.9                | -238.7              | 55.8                                     |

see that since 2002 the total harvest of grain crops has increased each year (Table 3).

Therefore, undoubtedly, in our case the reasons for the change of total crop harvest are the increase or decrease of separate grain crops which make up the total harvest of all grain crops

As we may see, one of the components of the aggregate index is the quantity which is indexed (the one whose change is reflected by this index). And another, fixed component is called weight. In quantitative indexes it fulfils the role of commensurable quantity. While calculating aggregate indexes various weights may be used.

Aggregate form for calculating indexes was introduced by German statisticians Laspeyres and Paasche (Harnett D.L. and Murphy J.L, 1985; Pfaffenberger R.C., 1977).

Laspeyres index:

$$(14) \quad I_p = \frac{\sum_{i=1}^n q_{i0} p_{i1}}{\sum_{i=1}^n q_{i0} p_{i0}}$$

Paasche index:

$$(15) \quad I_p = \frac{\sum_{i=1}^n q_{i1} p_{i1}}{\sum_{i=1}^n q_{i1} p_{i0}}$$

The results of calculating indexes having the same initial information are different according to formulas introduced by Laspeyres and Paasche. This may be illustrated by such an example (information in Table 2 ).

The impact of change of various grain crops yield on the total crop harvest according to Laspeyres formula:

$$(16) \quad I_d = \frac{\sum_{i=1}^n N_{i0} d_{i4}}{\sum_{i=1}^n N_{i0} d_{i0}} = \frac{3272.3}{2730.7} = 1.198$$

Table 3

### Indexes of the harvest of grain crops grown in Lithuania

| Grain crops                    | Indexes %           |        |        |        |                      |       |       |
|--------------------------------|---------------------|--------|--------|--------|----------------------|-------|-------|
|                                | Base – year weights |        |        |        | Given - year weights |       |       |
|                                | 2001                | 2002   | 2003   | 2004   | 2002                 | 2003  | 2004  |
| Winter wheat                   | 88.3                | 100.9  | 100.8  | 124.4  | 114.3                | 99.9  | 123.5 |
| Winter hybrid of rye and wheat | 132.7               | 141.8  | 224.9  | 299.5  | 106.8                | 158.7 | 133.2 |
| Winter rye                     | 74.2                | 54.7   | 47.2   | 45.2   | 73.6                 | 86.4  | 95.6  |
| Winter barley                  | 274.1               | 766.7  | 1285.2 | 640.7  | 279.7                | 167.6 | 49.9  |
| Summer wheat                   | 80.9                | 86.9   | 81.4   | 75.0   | 107.3                | 93.7  | 92.2  |
| Summer barley                  | 89.7                | 99.2   | 101.0  | 98.3   | 110.6                | 101.7 | 97.4  |
| Summer hybrid of rye and wheat | 73.1                | 61.6   | 65.1   | 43.2   | 84.2                 | 105.8 | 66.4  |
| Oat                            | 101.7               | 117.6  | 138.2  | 142.0  | 115.7                | 117.5 | 102.7 |
| Buckwheat                      | 86.4                | 72.1   | 100.0  | 88.4   | 83.5                 | 138.7 | 88.4  |
| Cereal mixture for grains      | 100.0               | 93.4   | 144.4  | 159.6  | 93.4                 | 154.6 | 110.5 |
| Cereal mixture for grains      | 137.5               | 1037.5 | 1087.5 | 387.5  | 754.5                | 104.8 | 35.6  |
| Peas and their mixtures        | 60.4                | 74.4   | 43.5   | 44.3   | 123.3                | 58.4  | 101.9 |
| Beans                          | 151.9               | 148.1  | 166.7  | 196.3  | 97.6                 | 112.5 | 117.8 |
| Vetch and their mixtures       | 85.1                | 91.1   | 25.0   | 11.9   | 107.0                | 27.5  | 47.6  |
| Lupine                         | 93.8                | 106.3  | 175.0  | 175.0  | 113.3                | 164.7 | 100.0 |
| Other leguminous crops         | 104.5               | 222.7  | 700.0  | 1154.5 | 213.0                | 314.3 | 164.9 |
| Total                          | 87.8                | 95.3   | 98.2   | 106.8  | 108.5                | 103.0 | 108.8 |

According to Paasche formula:

$$(17) \quad I_d = \frac{\sum_{i=1}^n N_{i4} d_{i4}}{\sum_{i=1}^n N_{i4} d_{i0}} = \frac{2916.9}{2492.0} = 1.171$$

The results achieved are rather similar: according to Laspeyres' formula the impact of yield on the total grain crop harvest is positive and due to this factor the result index – the total harvest of grain crops – increased by 19.8 %, according to Paasche formula – 17.1%, if we compare indexes of 2004 to indexes of 2000 data. The meanings of aggregate indexes of yield calculated by Laspeyres and Paasche's formulas coincide only in one case – if the amounts of commensurables are the same.

Since the Laspeyres index uses base period quantities as weights, they can easily become out of date (disadvantage) while the current quantities that the Paasche index uses as weight are always up-to-date (advantage).

The choice of weights is only a conditional principle of indexation. Some statisticians claim that in order to retain a general principle of the choice of weights, we would need to take the weights of the base period for both quantitative and qualitative indexes (variant of Laspeyres index). However, in such a case, the multiplication of quantitative and qualitative indexes wouldn't give the volume index, i.e. there would be no multiplicative model.

In professor Martišius's view (Martišius S., 1996, 2001) from the point of view of statistical methodology, the calculation used by Laspeyres is more convenient in that once you determine the weight coefficients, they may be used for all quantities of exponents no matter when they are indexed. This allows to reduce the demand of statistical information, needed for the calculation of indexes.

However, in order to retain the condition of interrelation of indexes, it is suggested (Čiulevičienė V., 2005; Harnett D.L., Murphy J.L., 1985; Genienė M., 1998; Valkauskas R., 1997; Adamov V., 1977, Borisova E.V., Žalabin A. L., 2003 and others) to take the weights of the period under review when aggregate indexes are formed.

In order to “free” a researcher from the necessity to choose between the two forms of indexes, a covariation index was introduced:

$$(18) \quad I_{\text{cov}} = \frac{I_p^P}{I_p^L} = \frac{\sum_{i=1}^n \frac{q_{i1} p_{i1}}{q_{i1} p_{i0}}}{\sum_{i=1}^n \frac{q_{i0} p_{i1}}{q_{i0} p_{i0}}}$$

In our case

$$(19) \quad I_{\text{cov}} = \frac{I_d^P}{I_d^L} = \frac{\sum_{i=1}^n \frac{N_{i1} d_{i1}}{N_{i1} d_{i0}}}{\sum_{i=1}^n \frac{N_{i0} d_{i1}}{N_{i0} d_{i0}}} = \frac{1.171}{1.198} = 0.977$$

However, the content of the covariation index remains obscure and its economic interpretation is complicated.

Fisher introduced an “ideal” form of index, which encompasses Laspeyres and Paasche's indexes:

$$(20) \quad I_p^F = \sqrt{I_p^L \cdot I_p^P} = \sqrt{\frac{\sum_{i=1}^n q_{i0} p_{i1}}{\sum_{i=1}^n q_{i0} p_{i0}} \cdot \frac{\sum_{i=1}^n q_{i1} p_{i1}}{\sum_{i=1}^n q_{i1} p_{i0}}}$$

In our case

$$(21) \quad I_d^F = \sqrt{I_d^L \cdot I_d^P} = \sqrt{\frac{\sum_{i=1}^n N_{i0} d_{i4}}{\sum_{i=1}^n N_{i0} d_{i0}} \cdot \frac{\sum_{i=1}^n N_{i4} d_{i4}}{\sum_{i=1}^n N_{i4} d_{i0}}} = \sqrt{1.198 \cdot 1.171} = 1.184$$

If Fisher's “ideal” index form is applied, due to the change of yield, 18.4% an increased of harvest is received. Because this index is calculated according to the formula of geometrical mean, using Paasche or Laspeyres' indexes, have both advantages and disadvantages of the mentioned mean. Therefore, we emphasize once again that factor index analysis may only give good results in case one goes deep into the matter of economic content of the index analyzed.

The main problem of the factor analysis of indexes – how to join harmoniously two forms of

analysis: relative and absolute indexes, by exactly calculating the impact of each factor on the increase or decrease of total sum. This causes most discussions [Martišius S., 2001; Adamov V., 1977 and others].

Even very simple calculations show that a relative analysis of the same indexes differs from an absolute analysis. For instance:

$$i_d = \frac{4.12}{3.61} = 1.141; \quad i_N = \frac{75.9}{66.5} = 1.141, \quad \text{i.e.} \\ i_d = i_N = 1.141, \quad \text{but} \quad \Delta_d = 4.12 - 3.61 = 0.51, \\ \Delta_N = 75.9 - 66.5 = 9.4, \quad \text{thus} \quad \Delta_d \neq \Delta_N.$$

In factor analysis of indexes the problems of its profundity and comprehensiveness are also important.

When calculating group indexes, we may use various weights. When choosing them, one has to consider the following:

- researcher's attitude (according to him);
- simplicity of calculation;
- accessibility of information, necessary for calculation;
- the fact that it is impossible to prove an advantage of weight systems of some methods over the system of another weight method

## Conclusion

1. Statistical indexes may be applied to determine the amount of total grain crop harvest and the impact of factors influencing it. Their advantages: easy to calculate, allow to determine the magnitude of both absolute and relative impact; may be used in the analysis of total crop harvest of separate grain crops and total grain crops; having the data of several years, we may calculate base and chain indexes.

2. Total harvest of grain, in 2004 to compare with 2000, increased 186.2 thousand t: due the change of the area size of different grain crops increased 424.9 thousand t, but due the yield per hectare decreased – 238.7 thousand t.

3. The most positive influence to the change of total harvest had the increase of yield per hectare of winter hybrid of rye and wheat – 129.5 thousand t and winter wheat – 76.6 thousand t. The most negative influence to the change of total amount of grain harvest had

winter rye 181.5 thousand t and summer barley – 157.3 thousand t.

4. The extensive factor – crop area – also significant influenced the total harvest change. Due to the increase of area of winter wheat the harvest increased 171.5 thousand t, of summer barley – 142.9 thousand t. The negative influence of this factor is not great.

5. When the index method is applied the most important problem is the choice of index weight. There is no unanimous opinion considering this issue. The best thing to be made when choosing weights is to consider the economic origin of the index analyzed.

6. Aggregate indexes may be applied to analyze not only the total crop harvest of all grain crops, but also in a greater detail – according to their classification: winter and summer crops, crops and leguminous plants for grains, crops according to their sort, etc.

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## **The impact of the size of farmers' farms and the type of farming on the land use efficiency in Lithuania**

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### **Abstract**

Economical results of the farming activity in separate groups of farmers' farms have been compared during the research according to the total land area and the type of farming. The comparative analysis of farming activity carried out according to the data of respondent farmers' farms showed that the economical results of farming activity for one ha of agricultural farming lands in Lithuania in the group of the smallest farms (up to 10.1 ha) were much more better than those from the group of the largest farms (over 150.0 ha) during the period of 2001-2003. The index of pecuniary incomes for one ha of agricultural farming lands was the highest in the farms occupied in horticulture and permanent crops and reached only approx. 70 per cent of the country's mean in the combined farms occupied in field crops and grazing livestock and mixed cropping. The most part of gross and net profit was received in the farms occupied in horticulture and permanent crops. The largest farms received the largest sums of investment support (SAPARD). The research results showed that in Lithuania the land is used much more intensely in small farmers' farms. For the carrying out the research, the system of the respondent farmers' farms data from the Farm Accounts Data Network (FADN) has been used.

**Key words:** farm size, land use efficiency.

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### **Introduction**

After the recreation of Lithuanian independence, the planned economy there was reorganized to market economy. After validation of the Agrarian reform programme in 1990 and related laws in 1991, the post-soviet agrarian reform has begun in Lithuania. Against the privatization in Lithuanian agriculture the collective farms and various government agriculture enterprises there were dominated. Alongside the was the subsidiary personal farms, which have some independence (Treinys M., 2000). The first farmer's farms there were established in 1989 according to „Ryot farm law“: it was the first step for farming creating in Lithuania. The „Law of agricultural Enterprises“ was validated in 1991, „The Law of Lithuanian Republic Cooperation“ – in 1993, and „The law of farmer farm“ – in 1999, and these laws have regulated the juridical base of functionality of these economy subjects. There was established the presumptions for formation of the farmers'

farms system, and for the horizontal and vertical relations between agricultural subjects.

For competing not only in national market, but also in internal market or outside it, agricultural subjects are encountered with a problem of optimal farm size and farm specialization. In a time of reform there were formatted only small farms with various specializations. It can be confirmed by provisional results of the census of agriculture in 2003 – amount of farms, which have manage 5 ha or less agricultural areas in Lithuania, was about two third parts of common amount of farms and they have manage the fifth part of all agricultural areas. The large farms (>50ha areas) amount was only 1.8% of all farms and have manage one-third part of all agricultural areas. The average farm's size was 9.1ha (less than in Latvia and Estonia). Though producing saturation in small farms usually is estimated as the reason of a low possibility of market competition, however the experience of West countries shows, that in a conditions of growing competition not only large farms can stay alive, but also a small farms.

On a way of a formation of farms the farmers encounter with a large amount of problems such as optimal farm size, farming type, requirement for work forces and its effectiveness, formation of the producing-technical base, economical using of banks support and the problem of infiltration to the market with agricultural production. These and other questions there were studied by such economists as A.Rimka, J.Mickys, A.Žumbolis, Z.Elzbergas. These problems stay relevant in present days. In present time the research work there was established on the changes of productivity in different size farms (Stanikūnas D., 2001; Vitunskienė V., 2002), dependence of economical results on a farming type (Penkaitis N., 2001; Kuodys A., 2005; Makutėnienė D., 2004), soil quality influence on a farm size and producing results (Poviliūnas J., 2001; Tamošaitienė A., Rutkauskaitė J., 2001) and the influence of farmers' age and farms' size on a farming results (Poviliūnas J., 2001; Makutėnienė D., 2004). Mentioned above authors have establish, that productivity in a large farms is larger, than in a small farms, that on increasing of soil productivity index the farm size and labor productivity increases too and that on increasing of farms the devisable land part increases and farmers' age becomes younger. There is no aplenty publication with presented compared estimating the farming activity results according to farms' groups (common land area, farming type) and established the influence of farms' size and farming type on land usage effectiveness. It becomes as **the purpose of this research** – to establish and to estimate the effectiveness level of land usage in a farms. The data of respondent farms of 2001-2003 was used for analysis. **Research object** – economical farming results in separate groups according common land area and farming type. **The research tasks** – to describe the content of farm size and to establish in what size farms and in what farming type of farms the land usage is most effective.

**Research methods.** The statistical data grouping, comparing, analysis and synthesis and graphical methods there were used in researching and comparing the economical results of different size and different farming type farms. There was used the summary data of Farms accounting Data Network, and there was analyzed Lithuanian Republic law and other documents.

## The conception and content of farm size

The classification of farms according to its size is very important, because it helps to select the significant farms from a business point and to differentiate the agrarian policy of State and all European Union. However, scientists don't have the same opinion according to one content of farm size concept, because of it is described with various different factors. The concept of farm size includes all objective producing factors in farming activity, so the agricultural science cannot give united content of concept for describing of farm size. In many cases the criteria of farm size measurement must be established in dependence on the kind of solved problem.

As the farms' classification according to size criteria can be average area of land or agricultural landed property (this criteria is obvious, popular, but not applicable (Čaplikas J., 1996)), workers amount, amount of livestock, producing potential (capital), output, farm's incomes and others. If we should classify the farms only according the land areas, we'll not estimate such important factors as soil quality, its usage intensity, livestock amount, specialization. So, that the classification according to crop areas and livestock amount is not rational way (Brassley P., 1997) and as the farm size criteria can be workers amount. D.Niekamp (2005), L.Cramer and C.Jensen (1997) are used agricultural production solving incomes largeness.

In a describing of Lithuanian farms' structure there was used such factors as land areas and livestock amount without relation between these factors, and the special structural research there was established only in a middle of 2003 year. In EU countries used methodic for structural researches is based on a two factors: the farm economic size, which describes producing potential, and farming type, which describes its specialization. These factors are used in Lithuania too for several years in researching the results of family farms' activity.

Because of the task of this research is to estimate land usage effectiveness level in a farms, so the selected criteria was the average land area in a farms. The effectiveness of land usage was estimated in different farming type farms too.

### **The comparing analysis of economical results in different size family farms**

The farm size has a large influence on economical results. In Lithuania (and in other EU countries) the family farms reflects the totality of the state agricultural production, so for further analysis for estimating of the effectiveness level of land usage in a farms and the relations between farms' size, farming type and landed properties' usage effectiveness there was used the data of Lithuanian FADN network database about family farms. In Lithuania data to FADN network about farms' activity flows from 1120 family farms in 2001 year, from 1238 family farms in 2002 year, and 1307 respondents in 2003 year (Data, 2001-2003). The amount increases about fifth part through the research period. The average land area of family farm in research period was respectively 88.1 ha, 96.69 ha and 114.97 ha. Agricultural land properties – respectively 84.44 ha, 92.75 ha and 110.33 ha. The farmers farms' in unfavorable places for farming land area was to fifth part less than country average in 2002 year and 34% less in 2003 year. Furthermore, in researched period about 70% of farmers land was leasehold land. The largest part was in a largest size farms (82% in a farms larger than 150 ha). It shows that increasing of the farms depends on a leasehold land. The arable land part in a common area was enough large (about 93%) in a family farms through the research period. In a group of the largest farms (>150 ha) it was 95%, and in a smallest farms group (about 10.1 ha) – about 80%.

The research results shows, that in 2001-2003 years period like average in family farms the largest value was in cropping production – respectively 1100, 1256 and 1209 Lt/ha (1 € = 3.4528 Lt) agricultural land property. Livestock production value was 2.7-4.5 times less. The common production value for one ha agricultural land property in research period have no changes and was about 1540 Lt/ha. In 2001-2003 years in family farms produced crop production value was 77.5% and livestock production value was 20.9% of the common production value. We must pay attention to such fact, that through the research period in smallest farms group the value of crop production for one ha agricultural land property was 2.3 time, livestock production value 6.3 times and common production value was 2.8 times larger than in largest farms' group, and respectively 2.5,

3.4 and 2.7 times larger than average value in family farms. Such differences shows that in a large farms land usage are not intensive and agricultural assets are lower than in small farms.

The crop production value difference for one ha of agricultural land property was small in all farms groups, except the group of smallest farms. Especially low livestock production amount for one ha land property was in a largest farms' groups (100.1 -150.0 ha and >150 ha) – only for 303 and 171 Lt. It shows, that the larger farms' specialization is mostly in crop production, and smaller farms specialization is mixed production, furthermore, small farms production is more expensive (milk, vegetables, potatoes).

Through the research period in a family farms average income for crop production consists more than 75% of all farm income, and it shows the clear crop direction specialization. In 2001-2003 years the average income for crop production was three times higher than for livestock production – respectively 921 and 276 Lt/ha agricultural land properties. The common income average in a farm for one ha agricultural land property through the research period has a little increasing tendency in family farms, and through three years increases 1.9%.

Through the research period the income amount difference between a smallest and largest farms' groups for one ha agricultural land property for solved crop production was 2.1 time: the smallest income was in a farm group with 30.1-40.0 ha land areas, and it consists about 50% income for crops as average from family farms. Income for solved livestock production for one ha agricultural land property in largest farms' group was 6 times smaller than in smallest farms' group and 1.9 times than an average in family farms. The research shows, that in farms' groups from 10.1 to 50.0 ha income amount differences for one ha of agricultural land property between solved crop production and from solved livestock production was too small, and on a way of largeness of farms the gap between income from solved crop production and from income from solved livestock production is increasing. In generalize, income from crop production was dominated in a structure of common income of a smallest and a large farms.

We must pay attention to such fact, that in different groups of farms' size the selling costs of crop production have differences and often was larger in groups of smaller farms. For example,

in 2003 year the potatoes cost in a smallest farms' group was 42.1% larger than in a largest farms' group, and the cost of field vegetables – respectively 2.3 times larger. And ass-backwards, the selling costs of livestock production in 2003 year in large farms' groups were larger than the costs in small farms' groups: milk and eggs – 25%, and cows – 10.2%. It has influence on amount of financial income.

When the common production value and an alternate expenses have a little decrease in a family farms (respectively 1.4% and 13.1%), the common profit for one ha of agricultural land property have increase 9.1% (from 811 Lt/ha in 2001 year to 885 Lt/ha in 2003 year). The farm is competitive if it can to produce products with a smallest cost. The research shows, that when the farms becomes larger, alternate expenses for one ha of agricultural land property sharply decreases. Furthermore, in a largest farms' group the alternate expenses for one ha of agricultural land property was 2 times smaller than in a group of smallest farms. Its largest part was for the crop alternate expenses – about 80% (about 40% - for mineral and other manure and about 25% - for plant protection products). Whereas, in a smallest farms group about 60% of alternate expenses was for livestock production (about 95% of these expenses – for forage). However, the common production value substantial differences between farms' groups and especially – between largest and small-

est farms – have determines the peculiarities of the distribution of common profit in farms' groups. The common profit for one ha of agricultural land property through the researched period in a smallest farms' group was in average 3.5 times larger than in a largest farms' group and 3.3 times larger than average in family farms (Fig. 1).

The permanent expenses, like alternate expenses, in a smallest farms' group was larger for 3 times than in a larger farms through the researched period. The largest part of these expenses was expenses for land rent, wage labor payment expenses; in small farms – expenses for electricity, buildings' observation and the expenses for repair and insurance. However, in a smallest farms' group for one ha of agricultural land property net profit was 4.2 times more than in a largest farms' group – respectively 1449 Lt/ha and 346 Lt/ha and 3.8 times more than average in a family farms. So, the coefficient of gross profit and net profit proportion in family farms smallest farms group was 0.51 and in a largest farms' group – 0.43 in average. This coefficient average in family farms through the research period was 0.44 (Fig. 1).

The research results have approved relation between average land area and expenses for one ha of agricultural land property. Expenses in a largest farms' group, in comparing with a smallest farms' group, were 2.4 times smaller, respectively 1115 Lt/ha and 2692 Lt/ha. In other words,

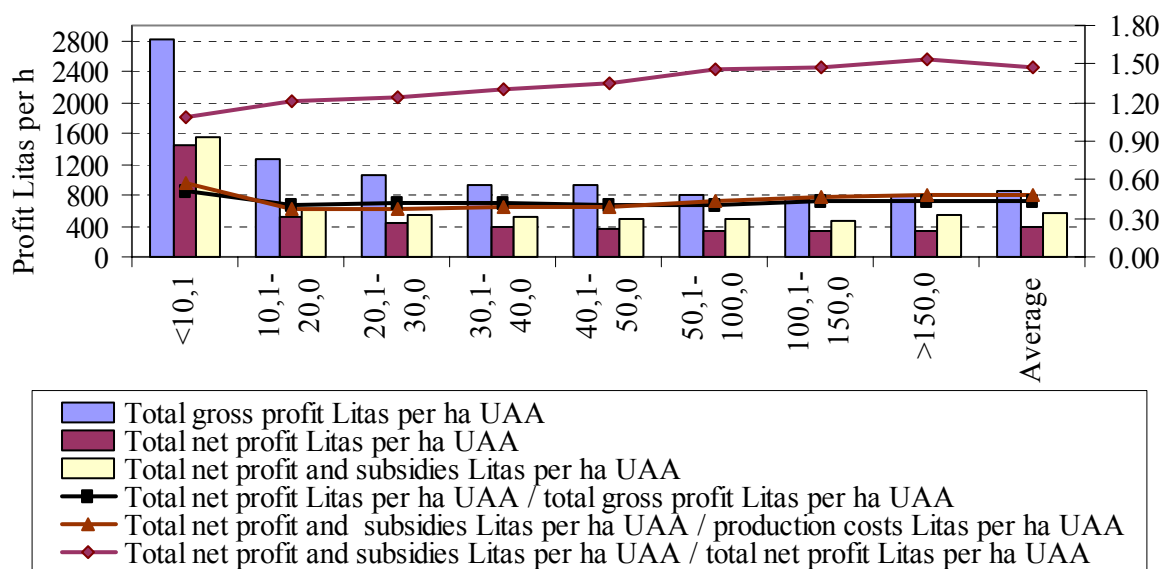


Fig. 1 The comparison of profit in Litai per ha UAA by the respondent family farm size in Lithuania average 2001 – 2003

when used land area of family farms increases, the part of alternate and permanent expenses for one ha of agricultural land property. It proves, that asserts the amount effect. In other words, when farm becomes large, the expenses for one ha of the land, decreases, and the farm becomes more competitive.

However, we cannot forget the state support for agricultural subject, which is presented through the direct disbursement by reimbursing the part of diesel fuel cost and by repaying the paid surplus value. This support increases in family farms in 2003 year in comparing with 2001 year 1.9 times – from 80 Lt/ha to 152 Lt/ha, from it subsidies for producing – 1.6 times, from 97 Lt/ha to 156 Lt/ha. If in 2001 year in a smallest farms' group subsidies for producing were 50 Lt/ha of agricultural land property, that in 2003 year these subsidies increases 6.8 times – to 341 Lt/ha of agricultural land property. Whereas, in a largest farms' group the subsidies changes for producing were smaller – its increases only 1.4 times, from 105 Lt/ha to 149 Lt/ha of agricultural land property. After calculating of subsidies for producing and surplus value readings for one ha of agricultural land property, it is observed, that the largest farms' support through the researched period was 1.2 times larger than the family farms' group. We must to pay attention for such thing, that the amount of subsidies depends on cultivable land areas size or on the amount of production. So the subsidies make deeper differentiation between small and large farms, which activity is on a low productivity and high productivity lands.

The investment support through the researched period has a tendency to increase and mostly depends on a farm size. If average of investment support through the researched period for one ha of agricultural land property in a smallest farms' group was only 0.3 Lt, that in a largest farms' group – 50.2 Lt. After estimating of investment support, subsidies' and surplus value reading sum for one ha of agricultural land property, it is observed, that it have increase through the research period 2.3 times – from 101 Lt/ha in 2001 year to 234 Lt/ha in 2003 year. If in 2001 year the support amount differences' in a largest and smallest farms groups for one ha of agricultural land property were too small (respectively 87 and 113 Lt/ha), that in 2003 year it is observed some gap: the support in a largest farms' group was 1.6 times bigger than in a smallest farms' group for one ha

of agricultural land property. It proves the competitive advantage of larger farms to small farms.

On a way of estimating of influence of state support for the farming results, there was calculated the proportional coefficient of net profit with subsidies and gross profit for one ha of the agricultural land property in separate groups of farms' size (Fig 1). We must notice, that the subsidies' part in a small farms' profit was smallest. These subsidies increase the net profit in family farms for one ha of agricultural land property about 50%, in a smallest farms' group – 8%, and in a largest farms' group – 54%. These differences between farms' size groups shows, that in a smallest farms' group the subsidies were smaller for one ha of agricultural land property (in 2003 year – 156 Lt, average – 114 Lt) in comparing with a largest farms' group (respectively 242 Lt and 188 Lt). It proves, that the state support makes different competition conditions in farms (better support is for largest farms' groups), and stimulates the investments in a large farms.

The largest attention must be paid for such thing, that when average land area is increasing, the expenses, as a sum of net profit with subsidies for one ha agricultural land property, have decrease in a farms in average. It is possible to make conclusion, that the farmers by making its farm larger, are oriented not to a profit limit, but to profit mass – to decreasing of expenses. However, the negative result has assert – the expenses' productivity decrease: every Lt of expenses has less sum of net profit and subsidies. The productivity of expenses in a smallest farms' group was almost 21% bigger than in a largest farm group – one Lt has net profit and subsidies respectively 0.58 and 0.48 Lt (average – 0.49 Lt). In fact, when we eliminate the extreme size groups, we have the increasing of effectiveness index.

So finally we can propose, that in Lithuania the land usage effectiveness level is higher in a small farms' group. However, in a future, by increasing the competitively between farms, the amount of small farms will decrease, especially the farms with land area to 3 ha. Lithuanian Government must initiate all means for stimulating of farms' increasing. However, the experience of EU countries shows, that the process of farms increasing and the formation of business agriculture is too slow, its speed depends on two way initiatives: on farms subject private initiatives and on state initiatives (Vitunskienė V., 2003).

## **The comparing analysis of family farms economical results according to farming types**

In Lithuania from 2002 year are selected eight groups according to farming type: specialist cereals, oilseeds and protein crops (1); general field cropping (2); horticulture and permanent crops (3); specialist dairying (4); mixed cropping (5); mixed livestock, mainly grazing livestock (6); field crops – grazing livestock, combined (7); field crops and granivores, combined (8). Dominating position is held by four farming types: specialist cereals, oilseeds and protein crops, general field cropping, specialist dairying and field crops – grazing livestock, combined. The largest farms according to agricultural land property area in 2002-2003 years were specialist cereals, oilseeds and protein crops farms, and the smallest - mixed livestock, mainly grazing livestock farms. The largest part of rented land was in specialist cereals, oilseeds and protein crops farms (average 76%) and in field crops and granivores, combined farms (71.5%), and a smallest part – in mixed cropping farms (48.5%).

The research results shows, that the effectiveness of agricultural land property usage in various farming types is very different. The best land usage is in horticulture and permanent crops farms. The farms of this direction in 2002 year receive production for one ha of agricultural land property for 6721 Lt, in 2003 year – 4465 Lt, and the average through the researched period was 5593 Lt. That is 4.5 times more than average in all family farms (1233 Lt/ha). The crop production value for one ha of agricultural land property have a small differences in specialist dairying, mixed livestock, mainly grazing livestock and in field crops and granivores, combined farms: the average was 600-650 Lt. Though in specialist dairying farms the value of crop production for one ha of agricultural land property consists of 50% of state average, however, the value of livestock production was highest – average 1188 Lt/ha agricultural land property. The large value of livestock production was received in field crops and granivores, combined farms. In these farms livestock production value for one ha of agricultural land property through the research period was about 4 times than the average of all family farms (289 Lt/ha).

We can observe, that specialist dairying and mixed field cropping-livestock direction farms

very little part of crop production sells – this production is used for feeding and livestock forage. The largest income for realized production was in horticulture and permanent crops farms – more than 5000 Lt/ha of agricultural land property and it was 4.2 times more than the average in family farms. Whereas, in field crops-grazing livestock, combined and in mixed cropping farms this index was only 65 and 71% of average. In average through the researched period more than 95% of income from livestock gets specialist dairying farms, about 90% - mixed livestock, mainly grazing livestock and about 84% - field crops and granivores, combined farms. Whereas, more than 97% of all income from field cropping was received in horticulture and permanent crops farms, about 93% - in specialist cereals, oilseeds and protein crops farms and about 92% - in field cropping direction farms.

By the comparing of expenses for one ha of agricultural land property in different farming type farms, we can observe, that the largest expenses was in horticulture and permanent crops farms – average was 1664 Lt (3.6 time larger than the average of family farms).

Because horticulture and permanent crops farms received the largest income for one ha of agricultural land property and have only a little amount of alternate expenses, its gross profit average through the researched period was 4171 Lt/ha of agricultural land property and was 4.7 times larger than the average of family farms (Fig. 2). In mixed production farms the gross profit for one ha agricultural land property have a small difference and its average was 750 Lt/ha.

The state support average, without the investments support, in family farms through the researched period was 160 Lt/ha of agricultural land property. The largest subsidies for producing was in horticulture and permanent crops and specialist dairying farms (respectively 244 and 184 Lt/ha of agricultural land property). The compensations for diesel fuel and payments for development of ecological producing in these farms producing subsidies structure in 2002 year consists respectively 41 and 25%, and in 2003 year – 54 and 29%. The smallest subsidies was for specialist cereals, oilseeds and protein crops and field crops – grazing livestock, combined farms (about 136 Lt/ha). The largest part of producing subsidies (38.3%) in all farming types farms was for compensations for diesel fuel (in 2002 year aver-

age was 53 Lt/ha for agricultural land property and in 2003 year – 68 Lt/ha).

The sum of support for investments for one ha of agricultural land property was smaller than support for producing. Its value in 2002 year was only 18%, and in 2003 year – 35% of all year support level. Investment support (for creating specialist dairy farms, SAPARD and other investment support) through the researched period had tendency to increase and was depended on a farming type. If average of investment support through the researched period for one ha of agricultural land property in mixed farms with dominated field crops was 5 Lt/ha, that in specialist dairy farms – even 122 Lt/ha (average in family farms – 59 Lt/ha). The main part of investments was awarded for SAPARD means' financing: this part increases in 2003 year 3.3 times in comparing with 2002 year.

After estimating of investment support and the sum of subsidies and surplus value reading for one ha of agricultural land property, we can observe, that in 2003 year, in comparing with 2002 year, it have increase in average 1,2 times and was 214 Lt/ha. The largest support was for specialist dairy farms and mixed livestock, mainly grazing livestock farms.

The part of subsidies and other support in net profit with subsidies in average in family farms in 2002 year was 33% and in 2003 year – 35%. It is important to notice, that the subsidies part in horticulture and permanent crops farms' net profit was smallest (the have increase the net profit for

one ha of agricultural land property through the research period only 6%), and in mixed livestock, mainly grazing livestock farms – was the largest (net profit have increase 2.1 times). It proves that state support makes conditions for specialist dairy farming in Lithuania.

## Conclusions

1. In Lithuanian family farms with a largest land area (>150 ha) land usage is not so intensive, as in smaller (< 10.1 ha) farms' group. The economical results of farming activity for one ha of agricultural land property in the group of the smallest farms (up to 10.1 ha) were much better than those from the group of the largest farms (over 150.0 ha) during the period of 2001-2003.

2. The best economical result for one ha of agricultural land property was received in horticulture and permanent crops farms.

3. The largest farms received the largest sums of investment support (SAPARD). Specialist dairy farms' support was 2 times larger than state average.

4. In Lithuania state economical support is directed for large livestock farming farms.

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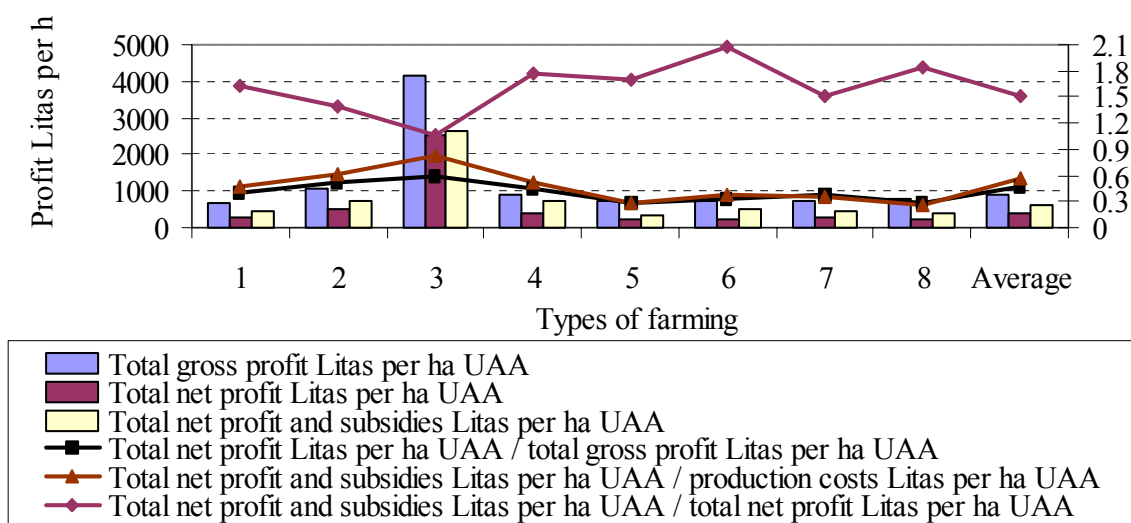


Fig. 2 The comparison of profit in Litai per ha UAA in respondent family farm according to types of farming in Lithuania average 2002 – 2003

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## **Agricultural-Environmental Program as a Source of Extra Income for Polish Farms**

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### ***Abstract***

The paper presents the additional possibilities of extra income for Polish farmers with use of agricultural-environmental programs. Farm owners who voluntarily agree to use the agri-environmental program receive financial help, which will compensate any lost revenue and extra cost. Such activities, on one hand, will cause the social-economic development of rural areas and their inhabitants, on other hand the implementation and generalization programs will have a positive effect for an active inclusion of the local governments in the execution of the agri-environmental programs.

**Key words:** agricultural-environmental programs, additional income, rural areas, agriculture.

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### **Introduction**

The problem with the environmental risks in Polish rural areas has become so normal that no one can say it is an “event” on the country scale. The environmental conditions on farm areas have for some time been in a state of deterioration because of the unstable social/economical situation of the country.

The main culprit of the ecological risks on farm areas is modern agriculture, intensive forms of farming and a lack of consciousness for the ecology by the inhabitants of these areas. A considerable area of Polish land is valuable for the sake of quality environmental resources. This is land that was once dominated by the big national farms (Kielsznia M, 2005).

Nowadays, as a result of economical metamorphism, many large farms now use new production methods. The activation of the economy in those areas caused a rapidly rising potential for damage to the environment. On one hand, there is an abundance of wildlife and landscape while on the other hand it is exceptionally susceptible to degradation.

It should be pointed out that valuable Polish rural areas are in fact one of the poorest in the country and are classified as problematic regions (old fashioned preferences and economical depression), which causes further damage to the environment. In this situation, the possibility of utilizing the agricultural-environmental program by farmers is necessary. The farmers will contribute to the protection of valuable ecological areas from

destruction, which is essential for the heritage of Polish wildlife and culture and furthermore, for neighboring countries.

The target of the researches was to present how introducing of agricultural-environmental program will effect on additional income of Polish farmers, their financial situation and state of environment in the rural areas.

### **Results of the implementation of the agricultural-environmental program**

Farming areas represent 5.1% surface of the EU and are created by human activity. The characteristics of European farms are huge differentiation forms and typical wildlife and also a richness in folk traditions, which testify to a specific historical rise in agriculture economics. For many years these areas were under the influence of moderate, traditional farming methods which were conducive to the inhabitants and the mosaic structure of the landscape. That system was low in cost but high in labor and was also friendly to the wildlife. However, this historical connection between the agri-economy and the wildlife have recently become ruined in many regions of the EU due to intensive development farms. The Common Agriculture Policy is being used as an instrument to build up the agricultural production industry due to uneven competition for EU farms on the world market. Nowadays, CAP is often criticized by European and world organizations for it's protectionism, which is incompatible with free market rules. It leads to expensive food overproduction

and aggravates the quality and intensity of the environmental degradation. Creating the first part of CAP, they forgot that farmers have multi-functional characters and the agricultural economy should be on guard to protect the abundant wildlife, which is the foundation for recreational and tourist development (Liro A, 2002).

In 1992, as a result of the MacSharry reforms, the agri-environmental program became a part of CAP. This is an obligatory instrument, implemented in every EU country. Although it is difficult to operate and needs a lot of working capital.

Nowadays, this instrument has received priority as a foundation for the "second level" of CAP. EU countries allocate almost half their funds to their Rural Development Area plan to realize the agri-environmental program. The agri-environmental program is popular in those countries that have recently been allowed to join the community's structure, which means Austria (78.2% of farmers and 67.8% of farm land), Finland (77.2% and 86.9%) and Sweden (63.7% and 51.6%). However, some of the founding EU member states – Belgium (2.8% of farmers and 1.7% of farm land), Holland (5.9% and 1.9%) and Italy (7.1% and 13.6%) have strong reservations about these programs.

The agri-environmental program has good perspectives permanently written into CAP as they have been accepted by various powers, political, economical and the public both in Europe and the world (Dobrzyńska A, 2004).

With regard to the lengthy neglect of the environment in Poland the situation is very bad. It has been worsened by the low ecological consciousness of farmers. Even the most conscientious farm producers cannot protect the environment because they do not have the correct instruments. Putting the agri-environmental program into practice in the developing territory of Poland was very important, especially for the regions with valuable nature. The agri-environmental program will be one of the most important instruments used to build up and develop the rural areas (Metera D, 2003).

The program has to abide by the rules set out to protect the environment against farm activities. Farms with long term contracts, who abide by the conditions, are granted financial support by the program (Karaczum M, 2003).

Financial support for agro-environmental activities is a multifunctional instrument used to

develop rural areas by CAP. It permits us to integrate environmental protection with developing farms in such a way as to minimize the negative farm effects and to maximize the positive interaction. This type of action has an innovative character, although it was implemented 10 years ago. The main objective of this instrument is to encourage farmers to continue applying the agriculture practice leading to ecological agricultural productions, which should be higher than the basic agricultural practice. The agricultural production system, friendly to the environment, means:

- to launch the limitations, in relation to the rules stating that production measures have to be geared to maximize the use of natural potential productions of agrocenoz.

- to limit the negative effects on the environment as a result of the production process.

- to take care of the environmental aesthetics and cultural values in farm areas.

Farm owners who voluntarily agree to use the agri-environmental program receive financial help, which will compensate any lost revenue and extra cost. Agri-environmental activities are realized on the basis of long term contracts including the national institutions responsible for EU funding, which means the paying agencies. Farmers have to participate in the program for a minimum of five years. In some countries it is ten years (Wójcik B, 2005).

In Poland, the national agri-environmental program is an obligatory instrument for the development of the rural areas plan, which is financed by public money. Its realization in 2004-2006 has to contribute to a well balanced rural development area. The program will be implemented throughout the country, covering all agro farmers. Participation in this program is voluntary. For its realization, 330 million euro has been allocated. The national agri-environmental program is definitely the most ecological in all areas of the development of rural areas plan.

The program means an essential upturn in the environmental protection system in Poland because it means that farmers can cultivate active environmental protection in their areas. From this time, all actions to protect the environment will cease to be dominated by the proper public service. The protection of the environment has no borders and includes National parks and reservations. The farmers and corporations will need

money in order to protect the environment and this finance has been assured from the national agri-environmental program (Dobrzyńska N., 2004)

The cost of implementing the program is financed by the EU budget from the European Agricultural Guidance and Guarantee Fund (EAGGF) with the condition that the area passes the first objective (for the characteristics of the area, the value of the gross national product does not exceed 75% of the value that is gauged for 15 countries) the union's state finance is 75% Poland, because of low gross national income is in the first objective and the same financing scale for the agri-environmental program by the EU will be higher. However, opposite to direct payments for farm production the country's budget has to guarantee money for this program.

Decree 1257/99 does not define payments to the farmers who are active in the program. It only defines the upper limit and the rule of calculating. The maximum financing cost calculated for 1 hectare is equal to the following value:

- for one year crops - 600 euro
- for specialist long term crops - 900 euro
- for different crops - 450 euro

Every EU country define state payments for an individual activity or package activity, which is then checked by the European Commission for the correctness of the calculations whilst negotiating the program. It is recommended that the upper limits of financing for the farmers who use the program be defined. It is geared to counteract excessive accumulation of finances for farmers with large areas. The fact that there are limits does not stop the beneficiaries from an obligation to execute the agri-environmental activities on all farms. Payments are withdrawn once a year after a complete economical cycle. The basis for withdrawn payments reflects the positive results of economic controls and payment applications being sent to the proper paying agency on time (Liro A., 2002).

The planning and implementation of the program involves many rules:

1. Rules in regard to good farm practice - one assumption of the program is the requirement to honor good farm practice which is obligatory in Polish law.

2. Rules of approach - the program is for all farmers. If the packet is only executed in parts of the areas, it means that the farmers are

obliged to honor the minimum requirements of the program on all farms.

3. Rules to maximize the environmental effects - the way the program is executed should be planned so as to have the most environmental effects. This means they have to strive to concentrate on the agri-environmental activity, which represents some specific quality, worth protecting against dangers to the environment. Diffused activities on a large area does not bring the right effect and will be marked as bad financial utilization.

4. Regional rules - should reflect the priority accepted with the strategy involving the development of farms and the protection of the environment at regional level.

5. Rules of the correct compensation calculations - for the sake of economics, defined high payments should not be overpaid. At the same time it should be remembered that farmers deserve payment in proportion to their efforts and expectations. In the first phase of the program, it is accepted that the compensation will be average for the whole country. It is to be expected that the European commission will expect regional payments when there is a big difference in direct surplus in the farm production system in individual regions.

Through the execution of the program in Poland and the rest of the EU countries, it will encourage farmers to take the role of protector of the environment, instead of producer. It is a good time, when there is a problem with surplus productions, to show farmers that they do not have to only produce what was very important but they can have various business interest without leaving their farms or territory.

After joining the EU, the new member states have enlarged the surface of rural areas by 50% and doubled the numbers of agro producers. Those two facts indicate that further holding the patronizing instruments in the agri-economy will not be possible in the long term. Therefore, new conceptions are slowly evolving in the EU from CAP instruments, which have created a subsidiary agri-production sector for building the second level concerned with developing the rural areas using environmental instruments. Therefore it is to be expected that the financing of the agri-environmental service will be given more of the state budget.

In connection with the realization of the agri-environmental program it has to achieve double objectives:

- connect limited production with an increasing range of activities for the environment.

- contribute to the differences in the income of farmers, which means giving extra income to those who are in the program.

Poland should be prepared to take the extra payment for the largest area. That perspective is a benefit for our country because we have something to protect and we should look after that, so that the attitude of Polish farmers, on the European market, can be proud of the fact that their products are unpolluted and tasty (Liro A., 2002).

We have to remember that the execution of the program contributes to:

- managing the agricultural areas in accordance with the requirements for environmental preservation (protection against water pollution and soil erosion) through the enforcement of using good agricultural practice as a basic activity and through raising awareness of the ecology in rural areas by training and contact with advisers.

- limiting the danger to the environment from intensive effects and an unbalanced agriculture or long term unused cultivated areas.

- to protect and shape the landscape and protect the endangered species of wild fauna and flora and their habitat.

- keeping the living organisms at a high environmental value with the traditions of forms and their usage when this is justified for the sake of the environmental rules.

- keeping the traditions of a variety of crops and orchards with the old variety of fruit trees and old animal breeds (for genetic resources).

## Conclusions

From the conducted analysis and made researches we can draw out the following conclusions:

1. The execution of the agri-environmental programs from the viewpoint of the environment brings only benefits and improves the state of the environment in rural areas. The programs are one of the best instruments of environmental protection in agricultural activities. They allow us to fit the production methods and their intensity to the requirements of environmental protection.

2. The implementation of the agri-environmental program is essential for the sake of the community. The execution of the programs allows

farmers to obtain additional financial benefits. This is especially important for problematic regions, where any supplementary income is vital. In the same degree, community farmers are changing- besides being food producers they are also "protectors of the environment".

3. The implementation and execution of the programs in rural areas is vital from the economical side. It leads to the appropriate conditions for protecting the environment, lowering the ecological waste, creating possibilities for giving new functions to rural areas.

4. The participation of farmers in the implementation process generally results in a higher contribution to the collective awareness in the field of environmental protection. At the same time it allows farmers to build strategies, develop farms, in accordance to the requirements of the program, which allows, on one hand achieves a penetrating analysis of the state of farming, the possession of natural resources and a general tendency for development while on the other hand, a better utilization of potential ownership.

5. The implementation and generalization programs will have a positive effect for an active inclusion of the local governments in the execution of the agri-environmental programs. The inclusion of the local governments in those activities will activate the farmers' interest and will allow for effective utilization measures.

6. Full and effective utilization of the programs should increase the scale of local initiatives in environmental protection and will lead, in the future, to creating a better diagnosis of the state of the environment and as a result, will lead to a rational utilization of the resources. It should also result in an enlargement of the area, on which, the agri-environmental programs have to be introduced.

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## Globalisation Processes in Polish Agrobusiness

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### ***Abstract***

Owing to the system transformation and structural changes which Poland has been undergoing since 1989, the proper use of rural areas deserve a more comprehensive study. The prospects for the development of agriculture depend on many factors, mainly the adequate system transformation and structural changes. The main issue is to select such a line of development, which would offer Polish agriculture new opportunities in competitive markets. System and structural solutions accompanied by the necessary investment and funds along with the institutional support will have an overwhelming influence on the development of Polish agriculture which, although in some respects outdated and having numerous weaknesses, stands a good chance of development. The agriculture should be based on the production of high quality food and food processing. Besides, it has not fully used its potential tools to fight off competition; it concerns the organisational mechanisms in particular.

This paper presents the most significant problems of the transformations of Polish agriculture seen from the aspect of globalisation processes.

The research first discusses theoretical issues of globalisation with reference to the world agrobusiness. Following the topic, the impact of globalisation processes on Polish agriculture has been analysed, and finally the way in which Polish agro-food industry participates in the process has been studied. The last section presents the issues concerning liberalization of Polish agro-food product trade. The study ends with a brief conclusion.

**Key words:** Polish agriculture, globalisation, Polish agrobusiness.

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### **Introduction**

Globalisation is a complex process embracing the whole world. While nowadays the process is much faster, we can trace its beginnings as early as the ancient times and the age of great geographic discoveries.

The word “globalisation” itself originates from Latin “globus” meaning a sphere, and is also identified with the Earth. In 1964 McLuhan used the phrase “global village” when talking about the modern communication techniques and instant information transfer.

The globalisation as a dynamic process is widely discussed in a historic, demographic, socio-cultural and institutional, and particularly in political and economic context.

The aim of this paper is to present globalisation on the turn of centuries in economic aspect as referred to Polish agriculture and in some aspects to agrobusiness.

### **Results and discussion**

#### **Theoretical issues of globalisation with reference to world agrobusiness**

Global problems in contemporary economics are treated as interdisciplinary course of scientific research. The methodological postulate refers to holistic analysis, so according to the contemporary science development - system taking into account the 21st century. The system method and the model method have a leading role in scientific researches since the middle of the 20th century, including the economic sciences.

The analysis of the globalisation process concerns space relations between various factors – demographic, economic and other – comprehensively approached in models.

Scientific researches published by J.W. Forrester “Principles of Systems” (1968) and “World Dynamics” (1971) indicate a particular usefulness of the systems dynamics method in

shaping the globalisation process, which replaced the heuristic techniques.

It is widely believed that the achievements of scientific-technical revolution – computer science in particular – are among the major causative factors. We find among those also the growing international work distribution, scientific-technical development and growing efficiency which involves sudden increase of the world trading, cash, technology, merchandise, flow of services and population movement (approximately 130 mln people per year).

In the last quarter of the 20th century new phenomena appeared in global economy and were connected with progressing dynamically liberalization inspired by such organizations as GATT and newly appointed WTO in 1995, which were strongly supporting the international investments. This led to noticeable increase of transnational corporations, their further fusion and expansion. Earlier, in the middle of the 20th century the economic integration started in Europe as a new global phenomenon playing a part in intensive increase of economic relations in the international aspect.

Among the phenomena with political background, which speeded up globalisation processes we also find the breakdown of real socialism countries, initiation of trade market transformation processes in post socialistic countries and opening for the world and market changes in China. As a result deep political conflicts appeared, a proof of which may be the war in Iraq and protests during the WTO Conferences, World and European Economic Forum, conducted by the opposition groups such as Greenpeace, Group 77 etc. The protests concern mainly the deepening polarization of incomes, which divide the world into the developed North and the underdeveloped South, the poor and the rich. The denial is associated with terrorism by many known politicians.

One of the most difficult and conflict causing problems in the world is the one concerning agriculture, the food safety and food trade liberalization. The specific features of agriculture, big differences in its development in particular countries on different continents, and low competitiveness of farm, threaten with their marginalisation and further deepening contrast between countries and regions in the world.

The traditional idea of food safety was based on possibly full self-sufficiency of producing process. According to Wilkin we should nowadays associate it with economic safety, which may be reached thanks to high and stable incomes of the society (Wilkin J. 2001).

### **Influence of globalisation processes on Polish agriculture**

Globalisation is present in every aspect of economy. It is thought that it has begun in agriculture during the Uruguay Round of GATT, when more competitive discipline in agricultural production and food trade started to be strongly supported. The agricultural model in the EU on the other hand, is rather restricting them (Niemyczyk J. 2001). Polish agriculture when compared to other EU countries is significant for its big amount of arable land, corn produce volume, potatoes, sugar, milk, hog and oxen livestock. While there is surplus of food due to intensive production in the EU countries, Polish products are characterized by high quality, taste standard and ecological origin, thanks to lower use of fertilizers and pesticides.

Taking into account the scattered agricultural structure and overpopulation in the farming areas it is an argument for keeping the family and multifunctional character of individual farms. In this situation the government support to these farms seems to be necessary, and may bring big benefits from exporting the ecological products. Among the farms with huge territories of arable land and high productivity we find:

- Zakłady Rolne Sierbowice (Lower Silesia) – 3286 ha UR
- Gospodarstwo Rolne Hulcze (Lublin Voivodship) 489 ha UR
- Gospodarstwo Rolne Dzierzoniów (Mazovia) 1156 ha UR
- Gospodarstwo Rolne Agro-Mays Senniki (Mazovia) 388 ha UR
- Rolnicza Spółdzielnia Produkcyjna Grubej Krupej 288 ha UR

Polish agriculture is now entering the process of globalisation, and because of its specific features the process is much slower than in other sectors of economy. It is made by influencing sectors which are connected with it, such as market, agro-food market, modern technologies and management techniques. This shall cause subordination and later clear division between agriculture, processing and food trading.

In conditions of progressing decentralization of function of the state and international relations of the world agro-food economy, new liberal tendencies become gradually obliging in Polish agrobusiness. Nowadays 7 sectors of food processing and 5 biggest enterprises with foreign capital are being counted as a part of global business, which controls 2/3 of the country market (Grzelak A. 2002).

The courses of action and strategies used for entering Poland into the corporations' market of transnational corporations are the integral part of action on the global scale. They are subordinated to general corporate development strategies.

They use to the greatest degree the trade possibilities connected with the big market and to a smaller degree they refer to increasing produce possibilities (Borchard J., Kraciuk J. 2003).

Globalisation leads to increasing relationships between enterprises on the international scale and this problem concerns also agrobusiness. The integral part of this process is the increase of competitiveness on the world scale. Next to processing, the food distribution is subject to globalisation, mainly through still developing network of markets and supermarkets with the majority of stock holders being foreign. In Poland and other countries one can observe a strong expansion of few international trading concerns, which have identical offers in almost identical supermarkets, which leads to fall of local, small and medium enterprises (Zyzynski J. 2004).

#### **Polish agro-food industry in globalisation processes**

After Poland changed its economy from centralized economy and planned market, in the period of transformation a large number of foreign investments were attracted also for the agrobusiness sector. Internationalisation and globalisation appear when transnational enterprises appear, which have big satellite shares in many countries and employ large groups of employees in food processing and distribution.

Nestle Concern (Switzerland) employs approximately 200 000 people and has 500 branch offices in 87 countries (Sznajder M. 2002). Other giants are such companies as Coca-Cola (the USA), Danone (France), Unilever (the Netherlands and Great Britain). Among the world's 30 biggest enterprises in food sector 15 belong to American companies.

In Polityka magazine's ranking of Poland's 500 biggest companies in years 2002-2004, agrobusiness presents 22 enterprises including foreign capital (4.4%). The difference in gross profit between Zakłady Tluszczowe w Gdansk (481 place in the ranking) and GK Carlsberg Okocim (116 place in the ranking) equals to 10.5 : -1.2, while the last company on the list had losses in 2002. Some of the companies such as Unilever Polska S.A. W-wa did not make public data concerning their profit including 23% in agrobusiness.

#### **Liberalization of trade with Polish agro-food products**

The slow but progressive liberalization of agro-food products has an important role in integration with the EU agriculture. As a result of Poland's accession to the EU tax barriers and contingents vanished, which enabled Polish products to spring up onto European markets. It means that there are also new possibilities and challenges for Polish agro-food industry connected with trying to live up to competition on the world markets.

The international trade was always seen as an important factor in socio – economic development, which is realized by increase of the volume of exchange and achievement of positive balance of trade, and profitable international trade may become a lever for the economic growth. In Poland unfortunately the disproportion of import and export dynamics has appeared in the period of transformation. This disproportion was unfavourable due to the lack of balance in the general trading, including agro-food products. Market reforms and reorientation of economic structure caused by the breakdown of RAP had a significant influence on size and structure of Poland's trade exchange. Nowadays the main exchange partners are the developed countries, including the EU countries, which have 50% share in export and import. The increase of import dynamics with the EU is higher than the export to the EU countries. The main reasons for lower dynamics were the following: worse economic situation, degradation of export profitability and unprofitable changes in price relations between import and export. Moreover the continuing appreciation of PLN till 2003 decreased the price competitiveness of export stimulating import which resulted in the increased deficit. The main reason for these disproportions is the disadvantageous merchandise structure, which resulted

Table 1 / Tabela 1

**Agribusiness enterprises on the ranking list of 500 companies in 2002-2004**  
**Przedsiębiorstwa agrobiznesu na liście rankingowej 500 firm w latach 2002 - 2004**

| Place in the ranking | Name of enterprise | Nazwa przedsiębiorstwa                                          | General income in mln PLN |      | Sale profitability rate        |      |       |      | Employment<br>Zatrudnienie osób |      |
|----------------------|--------------------|-----------------------------------------------------------------|---------------------------|------|--------------------------------|------|-------|------|---------------------------------|------|
|                      |                    |                                                                 |                           |      | Stopa zyskowności ze sprzedaży |      |       |      |                                 |      |
|                      |                    |                                                                 |                           |      | Gross - Brutto                 | 2002 | 2004  | 2002 | 2004                            | 2002 |
| 2002                 | 2004               | 2                                                               | 2002                      | 2004 | 2002                           | 2004 | 2002  | 2004 | 2002                            | 2004 |
| 30                   | 3                  | GK Żywiec - W-wa (Brewery Żywiec, Elbląg, Warka)                | 2997                      | 3706 | 3.50                           | 9.10 | 2.66  | 7.62 | 5417                            | 5787 |
| 44                   | 51                 | Uniliver Polska S.A. W-wa *                                     | 2257                      | 2453 | •                              | •    | •     | •    | 2400                            | 2681 |
| 73                   | 100                | Nestle Polska S.A. W-wa (Winiary, Goplana)                      | 1375                      | 1577 | 6.25                           | 7.11 | 4.07  | 5.55 | 2547                            | 2000 |
| 84                   | 85                 | GK Belvedere Sobieski W-wa- Stargard Gdański                    | 1281                      | 1695 | 4.16                           | 3.14 | 3.92  | 1.59 | 690                             | 610  |
| 95                   | 86                 | GK Muszkieterów - Poznań (supermarket network)                  | 1200                      | 1690 | •                              | •    | •     | •    | 5000                            | 6000 |
| 108                  | 149                | GK Rolimpex W-wa                                                |                           |      |                                |      |       |      |                                 |      |
| 109                  | 130                | Master Foods Polska Sp.z.o.o. Sochaczew                         | 1113                      | 1158 | 1.83                           | 2.99 | 0.94  | 2.18 | 982                             | 876  |
| 116                  | 139                | GK Carlsberg Okocim-Wa-wa (Breweries Okocim, Kasztelan, Bosman) | 1091                      | 1298 | •                              | •    | •     | •    | 1322                            | 1290 |
|                      |                    | GK Sokołów S.A. W-wa (Meat processing)                          | 1052                      | 1223 | -1.22                          | 1.26 | -1.14 | 0.83 | 1453                            | 1364 |
| 133                  | 129                | Z-dy Tuszczowe S.A. Kruszwica, W-wa                             | 934                       | 1311 | 0.50                           | 1.20 | 0.40  | 1.19 | 3700                            | 4324 |
| 221                  | 235                |                                                                 | 600                       | 719  | 1.50                           | 6.58 | 1.30  | 5.37 | 614                             | 518  |

**Source:** Weekly newspaper "Polityka" 2003 & 2005 (17), Internet <http://polityka.onet.pl/rank 500> and own analysis.

**Comments:** Initial information – no data available, GK – Capital Group.

**Źródło:** Tygodnik "Polityka" 2003 i 2005 (Nr17), Internet <http://polityka.onet.pl/rank 500> i obliczenia własne.

**Uwagi:** Informacje wstępne - Brak danych, GK - Grupa Kapitałowa.

Table 2 / Tabela 2

**Value of Poland's foreign trade turnover in 1990-2002 (in mln USD)**  
**Wartość obrotów handlu zagranicznego Polski w latach 1990-2002 (w mln USD)**

| Specification<br>Wyszczególnienie                                                                         | 1990    | 1991    | 1992    | 1993    | 1994    | 1995    | 1996     | 1997     | 1998     | 1999     | 2000     | 2001     | 2002     |
|-----------------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|
| <b>General trade - Handel ogółem</b>                                                                      |         |         |         |         |         |         |          |          |          |          |          |          |          |
| Export                                                                                                    | 14322.0 | 14903.4 | 13187.0 | 14143.0 | 17240.0 | 22895.0 | 24440.0  | 25751.3  | 28228.9  | 27407.4  | 31651.3  | 36092.2  | 41009.8  |
| Dynamics 1990<br>= 100 %                                                                                  | 100.0   | 104.1   | 92.1    | 98.8    | 120.4   | 159.9   | 170.6    | 179.8    | 197.1    | 191.4    | 221.0    | 252.0    | 286.3    |
| Import                                                                                                    | 9780.8  | 15756.5 | 15913.0 | 18834.0 | 21569.0 | 29050.0 | 37137.0  | 42307.5  | 47053.6  | 45911.2  | 48940.2  | 50275.1  | 55112.7  |
| Dynamics 1990<br>= 100 %                                                                                  | 100.0   | 161.1   | 162.7   | 192.6   | 220.5   | 297.0   | 379.7    | 432.6    | 481.1    | 469.4    | 500.4    | 514.0    | 563.5    |
| Balance Saldo                                                                                             | 4540.8  | -853.1  | 2726.3  | -4691.0 | -4329.0 | -6154.8 | -12697.0 | -16556.0 | -18825.0 | -18504.0 | -17289.0 | -14183.0 | -14103.0 |
| <b>Agri-food trade - Handel rolno-spożywczy</b>                                                           |         |         |         |         |         |         |          |          |          |          |          |          |          |
| Export                                                                                                    | 2207.1  | 2468.7  | 2006.0  | 1676.2  | 2099.0  | 2529.9  | 2783.7   | 3297.2   | 3123.1   | 2667.6   | 2650.0   | 3030.1   | 3285.1   |
| Dynamics 1990<br>= 100 %                                                                                  | 100.0   | 111.9   | 90.9    | 75.9    | 95.1    | 114.6   | 126.1    | 149.4    | 141.5    | 120.9    | 120.1    | 137.3    | 148.8    |
| Import                                                                                                    | 958.3   | 2139.6  | 2139.6  | 2240.4  | 2394    | 2996.9  | 4026.2   | 3766.6   | 3866     | 3374.4   | 3182.6   | 3406     | 3575.7   |
| Dynamics 1990<br>= 100 %                                                                                  | 100.0   | 223.3   | 223.3   | 233.8   | 249.8   | 312.7   | 420.1    | 393.1    | 403.4    | 352.1    | 332.1    | 355.4    | 373.1    |
| Balance Saldo                                                                                             | 1248.8  | 329.1   | 74.4    | -564.2  | -295.0  | -467.0  | -1243.0  | -469.4   | -742.9   | -706.8   | -532.6   | -375.9   | -290.6   |
| <b>Share of agri-food turnover in general turnover - Udział obrotów rolno-spożywczy w obrotach ogółem</b> |         |         |         |         |         |         |          |          |          |          |          |          |          |
| Export                                                                                                    | 15.4    | 16.6    | 15.2    | 11.9    | 12.2    | 11.1    | 11.4     | 12.8     | 11.1     | 9.7      | 8.4      | 8.4      | 8        |
| Import                                                                                                    | 9.8     | 13.6    | 13.4    | 11.9    | 11.1    | 10.3    | 10.8     | 8.9      | 8.2      | 7.3      | 6.5      | 6.8      | 6.5      |
| Balance Saldo                                                                                             | 27.5    | -38.6   | 2.7     | 12.0    | 6.8     | 7.6     | 9.8      | 2.8      | 3.9      | 3.8      | 3.1      | 2.7      | 2.1      |

**Source:** Own analysis based on „Handel zagraniczny produktami rolno-spożywczymi. Stan i perspektywy”. IERiGŻ w Warszawie. 1991-2003.

(‘Foreign trade with agri-food products. situation and perspectives’).

**Źródło:** Opracowanie własne na podstawie „Handel zagraniczny produktami rolno-spożywczymi, Stan i perspektywy”, IERiGŻ w Warszawie, 1991-2003.

from low technical- technological level and late enterprise restructuring (about 50% of export consists of labour and assets consuming products).

Poland's accession to the EU on May 1, 2004 has radically changed this disadvantageous situation in international trade for many years. The conditions of export have become much better. The results of 2004 if compared to 2003 showed the increase of trading by USD 40.4 billion, while its balance was constantly improving. High dynamics of exchange continued throughout 2005, thus improving the negative balance to USD 1.4 billion from USD 6 billion in 2001 (Kowalski A., 2005).

## Conclusion

In the future perspective the globalisation processes of restructuring, developing technical and institutional infrastructure, ecological agro-produce and environmental protection, as well as continuation of market reforms by restructuring agro-food industry may be crucial for Polish agricultural development. Polish agriculture in face of integration and globalisation challenges will particularly need a program of modernization and globalisation of rural areas. The crucial meaning gains also such an economic policy, which speeds up actions in favour of competitiveness of Polish agro-products on the EU and the world markets. Such actions will be more difficult because of lack of the preference of home products within the EU common market. At the same time it is possible that after the first period of the presence on the EU markets, Polish agriculture and agro-food industry will learn to use its strengths better – in particular food production on ecologically clean lands. Moreover, Polish agro-food industry due to its significant foreign capital is well prepared for competitiveness on international markets. While as far as liberalization of agro-food products trade is concerned its part in trade will be decreasing, as it happens from the beginning of free market economy in Poland, which is characteristic to the developed countries economies.

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## Procesy globalizacyjne w polskim agrobiznesie

*Zmiany systemowe i strukturalne zachodzące od kilkunastu lat w Polsce skłaniają do bardziej niż dotychczas całościowego spojrzenia na problematykę właściwego zagospodarowania obszarów wiejskich. Perspektywy rozwoju rolnictwa zależą od wielu czynników, w tym głównie odpowiednich przemian strukturalnych i systemowych. Najważniejszą kwestią jest wybranie takiego kierunku rozwoju, który stwarzałby polskiemu rolnictwu nowe szanse na konkurencyjnych rynkach. Rozwiązania systemowe i strukturalne oraz odpowiednie inwestycje i finansowanie wraz z odpowiednim wsparciem instytucji będą miały decydujący wpływ na rozwój polskiego rolnictwa. Polskie rolnictwo mimo wielu braków i zaległości ma szanse rozwojowe głównie w oparciu o produkcję wysokiej jakości żywności oraz przetwórstwo rolno-spożywcze, a ponadto nie wykorzystало jeszcze wszystkich instrumentów w walce konkurencyjnej, zwłaszcza z zakresu instrumentów organizacyjnych.*

*W niniejszej pracy przedstawiono najważniejsze kwestie przemian polskiego rolnictwa w aspekcie procesów globalizacyjnych.*

*W przedstawionym opracowaniu najpierw omówiono teoretyczne zagadnienia globalizacji*

*z odniesieniem do światowego agrobiznesu. W dalszej części zgodnie z tematem przeanalizowano wpływ procesów globalizacji na polskie rolnictwo, a następnie jak w procesie tym uczestniczy polski*

*przemysł rolno-spożywczy. W ostatnim rozdziale zawarte zostały kwestie liberalizacji handlu polskimi artykułami rolno-żywnościowymi. Całość zamyka krótkie podsumowanie.*

# Milk Sales Diversification Possibilities by Means of Private Label

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## Abstract

The paper focuses on the study of milk sales possibilities due to the development of private label for milk. The questionnaire substantiating the choice of consumers and possibility to develop such private label was carried out. The experience of a multi-branch company Daugava in the establishment of an exclusive private label for milk-based products was mentioned as a positive sample. The aspect that milk-processing companies together with sales companies are the main developers of private labels has to be considered regardless of the positive attitude of consumers towards private labels. The following cooperation shall be based on mutual profitability, therefore the main benefits and losses for the introduction of private labels for milk were evaluated and summarised.

**Key words:** milk, private label, sales diversification.

## Introduction

With the growth of milk and milk-based products market up to the EU level, contradictory tendencies frequently related to global consolidation processes in milk production and processing have been observed. Currently several factors affecting the consumption of milk and milk-based products in a certain region have come in the foreground; and they are the following ones: awareness of consumers, marketing trends, foodstuff use advantages, purchase convenience, stage of milk-based products market development and promotion of healthiness of dairy products.

However taking into consideration the aforementioned factors, milk products, according to several marketing specialists (J. Smith 2005; K. Kozgunov 2005; A. Borodin 2004), are products with relatively limited sales diversification degree. It is possible to overcome this limitedness by means of an innovative approach either in production technology or way of presentation, which in its turn is determined, by innovative approaches of marketing.

The research emphasises some of the possibilities that could be used by milk producers and processors of Latvia to increase the competitiveness of milk and milk-based products up to the EU level.

The aim of the research is to assess and suggest milk sales diversification possibilities on the basis of the present situation in milk sales.

## Methods and materials applied in the research:

The following methods have been applied for the purpose of the research- monographic, method of data grouping and analysis, correlation and regression analyses, questionnairing - for the clarification of consumers' opinion and studying of wishes related to milk sales, interviews held with experts - to clarify the opinion of the leading Latvian milk processing companies on problems and problem solutions related to sales of milk.

References – theoretical literature on marketing studies (Anderson E., Coughlan A.T (1987), Cateora P.R (1990), Бородин А.(2004) etc.), literature on the latest achievements and tendencies in milk production and marketing ( Козгунов К. (2005), Дж. Смит, (2005), Belinska I. (2005) etc.), information provided by milk processing companies (multi-branch company Daugava, A/s Rīgas piena kombināts, A/s Tukuma piens etc.).

## Results and discussion

During the last five years the volume of produced milk in Latvia has fluctuated, see Figure 1, where:

- the largest volume of milk has been produced in 1998, namely, 950.2 thousand tonnes;
- in 2004 the volume of produced milk amounts to only 82% of the volume produced in 1998;

■ in 2004 vs. 2003 the volume of milk sold for processing has increased by 10%;

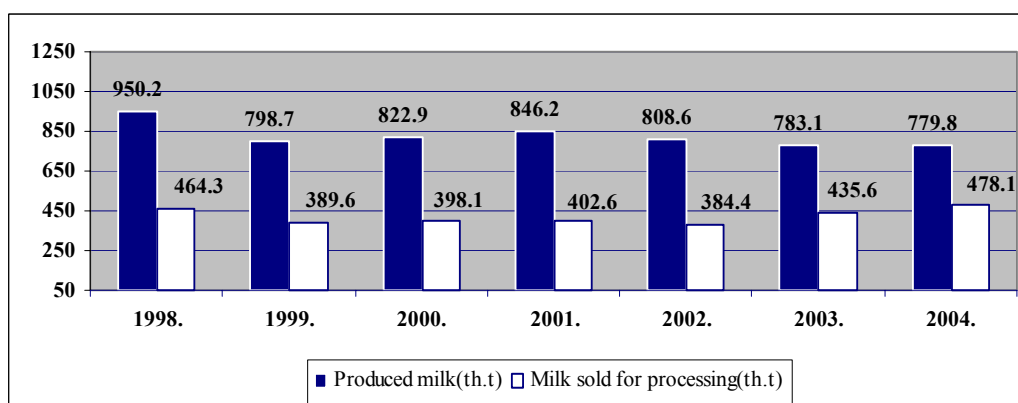
■ a positive tendency that has radically changed in 2004 in comparison with 1998 is the proportion of sold milk and milk transferred for processing; where in 1998 almost half or 48.8% of the produced volume was transferred for processing, while in 2004 almost 61.3% of the produced milk volume were processed.

The development of dairy production and specialisation of dairy farms in dairy cattle breeding explains the tendency of growth of milk volume transferred for processing. This is also evidenced by the comparison of the years 2004 and 2000 - where the following tendency was observed in the farms having the largest number of milking cows - 30 and more: the total number of farms has increased by 47%, especially rapid growth in the number of farms has been observed in the group of farms with number of milking cows rang-

ing from 30 to 99, here the increase is 68 %. A positive tendency has also been noticed in the increase of the number of milking cows in the mentioned farms; where the increase amounts to 25%, yet if in 2000 the proportion of milking cows in the largest farms against the smallest ones was 17%, then in 2004 it was already 24%, which evidences positive structural changes experienced by the farms and thus considerably affects the increase of milk volume transferred for processing.

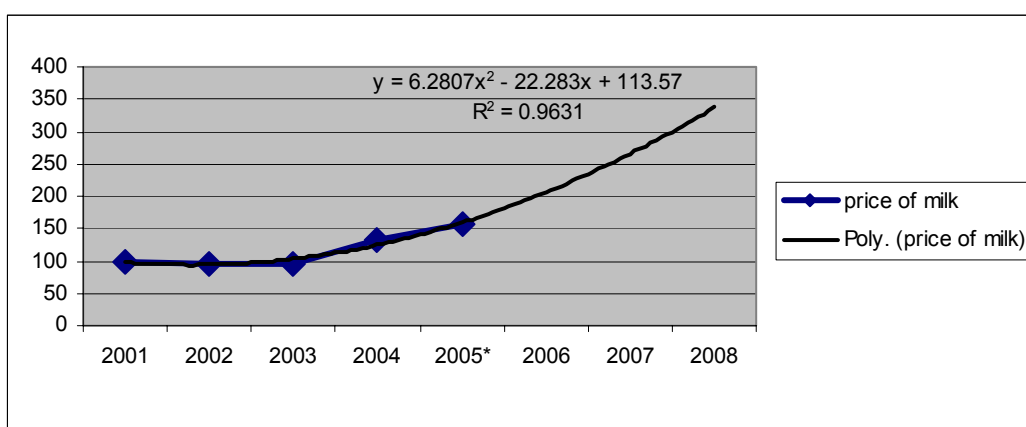
However these positive changes result in the fact that the majority of burden lies upon milk processing companies, since the possibilities for milk sales in Latvia have variable success.

The research included the studies on the changes of milk prices and changes in the production volume of pasteurised milk and led to the interconnection that the production of pasteurised milk was affected by the fluctuations of milk price, which was also proved by the correlation coeffi-



Source: Ministry of Agriculture of the Republic of Latvia.

Fig. 1 Volume of produced and sold milk in Latvia between 1998 and 2004, thou. t



Source: Latvian milk confederation and calculations done by the author.

2005\* - data about 11 months of 2005.

Fig. 2 Changes in purchasing price of milk (LVL/t) and developmental forecast

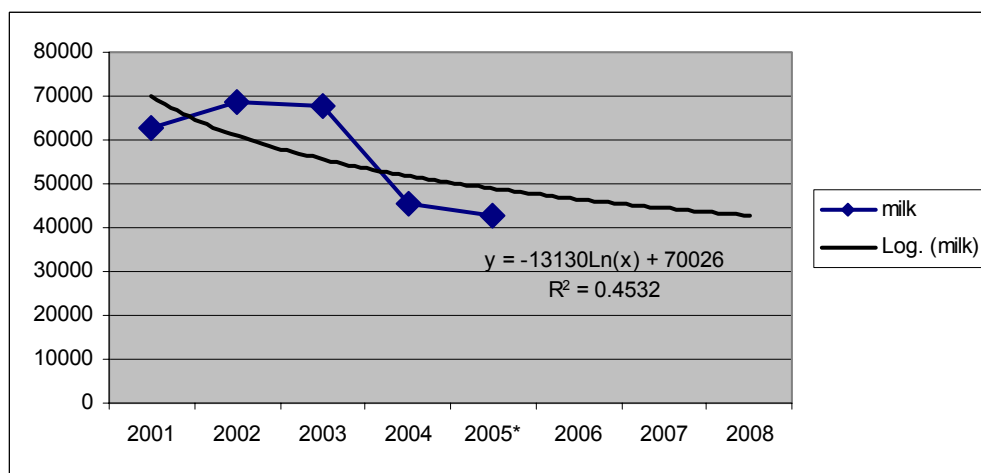
cient  $r=0.98$ . Yet milk prices and production volumes of pasteurised milk have opposite trends, see Figures 2 and 3.

Figure 2 shows that purchasing prices of milk have a tendency to increase with the sharpest increase observed between 2003 and 2004, when the purchasing price of milk has increased by 37.27%.

The production of pasteurised milk has a negative tendency and the period between 2003 and 2004 proves the most radical negative changes, when the production volume of pasteurised milk has decreased by 32.62%.

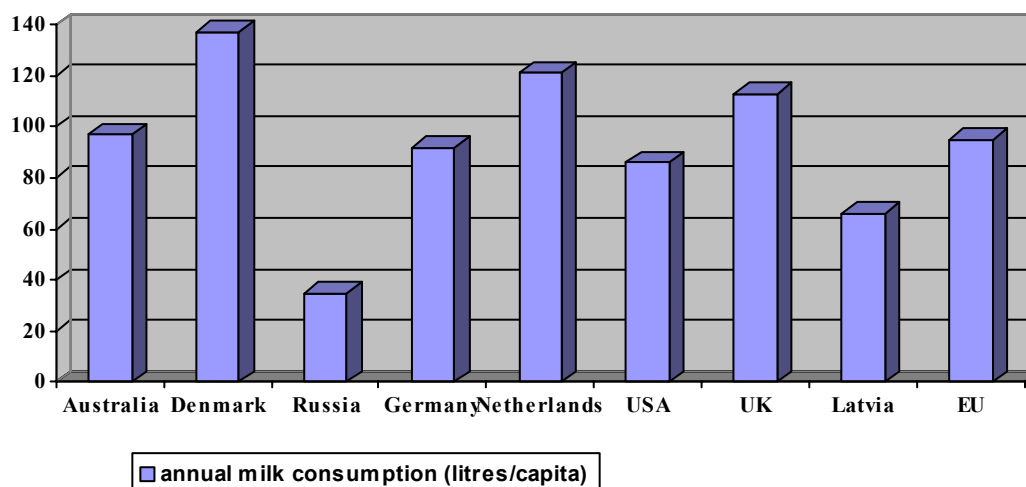
However regardless of the aforementioned tendencies in milk sales, new tendencies determining and developing general marketing policy of milk

sales in each milk processing company have started. A new notion of marketing – *private label* that is directly applied to milk is being advertised. The development of this notion is determined by continuous development of market and innovative approach of marketing to sales possibilities of everyday use products. Especially this tendency is being emphasised for those goods and products of everyday use the diversification of which is relatively limited. According to J. Smith (Дж. Смит, 2005), a marketing specialist, it is considered that milk and milk-based products are the products to be most hardly diversified, the sales volume of which is mainly determined by consumption. As it is shown in Figure 4, milk con-



Source: home pages of milk processing companies.

Fig. 3 Pasteurised milk production trend in Latvia (tonnes) and developmental forecast



Source: Eurostat information (Milk and milk products).

Fig. 4 The average annual milk consumption per capita in 2004 (litres)

sumption in Latvia is one of the lowest in comparison with other countries.

As it is seen from Figure 4, milk consumption in Latvia amounts to 70% of the average EU consumption in litres per capita, however the data have to be looked upon critically, as no rural farms using milk for self-consumption are included into the data analysed.

Therefore milk processing companies have come to the following opinion that competition in Latvia for the milk purchaser buying milk in retail sales has become very intensified, thus differ-

ent names or separate *private labels* are being elaborated for milk. These labels are not any more associated with the name of a milk processing company. One of the most characteristic features is the use of different names for milk or development of private labels.

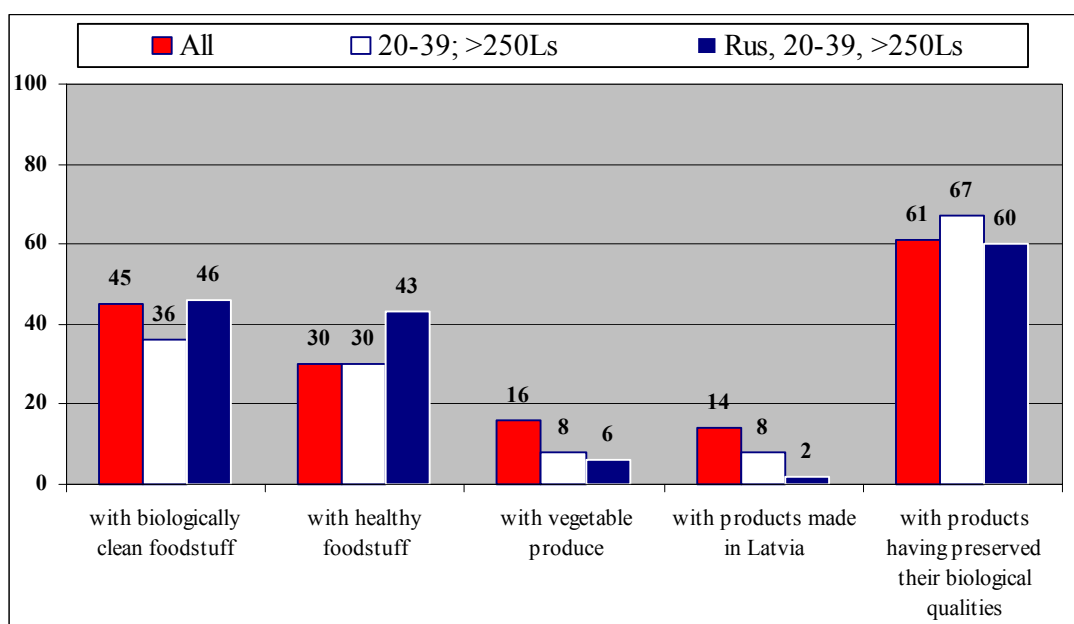
There are several private labels in Latvia that have already won their place in the market:

- Night milk;
- milk "Rasa";
- milk "Lāse";
- milk "Baltais" etc.



Source: Latvian milk confederation and calculations done by the author.  
2005\* - data about 11 months of 2005.

Fig. 5 Samples of several private labels, logos



Source: multi-branch company Daugava.

Fig. 6 What kind of association do you have hearing the phrase – alive products?  
(2 answers possible)

In 2005 according to sales representatives, a multi-branch company *Daugava* has performed the most successful milk marketing idea, i.e., to sell milk as glassed products and develop it as an exclusive product having a certain idea – *natural (alive) products*. Being aware of milk sales marketing peculiarities characteristic to multi-branch companies, the action plan of the company *Daugava* was based on the task to ascertain whether the chosen target market was interested in natural products containing no E additives, to what extent they were informed about such products and on the basis of their information level to clarify how and of what kind of message had to be worked out regarding *Alive products*. In order to get answers to these questions, the multi-branch company *Daugava* organised and performed the study in Internet portal *Shapshot* (the beginning of 2005). The respondents registered in the portal and basically representing population of Riga and

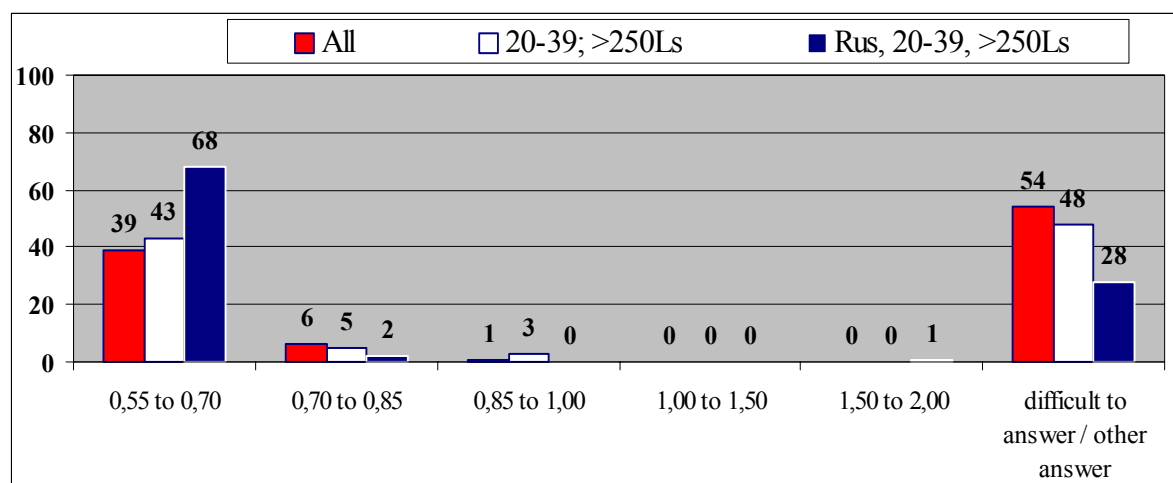
Riga district with the income level exceeding LVL 250 per month filled in the questionnaire. Totally 500 respondents both Latvians and Russian speaking people participated in the study. 30% of respondents were of age between 20 and 39 years.

The most characteristics questions and answers were the following:

According to Figure 6, the majority of respondents prefer products, which have preserved their biological qualities, however only 14% of respondents associate such products with the products made in Latvia. Thus this is an issue to be successfully used in marketing activities of a multi-branch company.

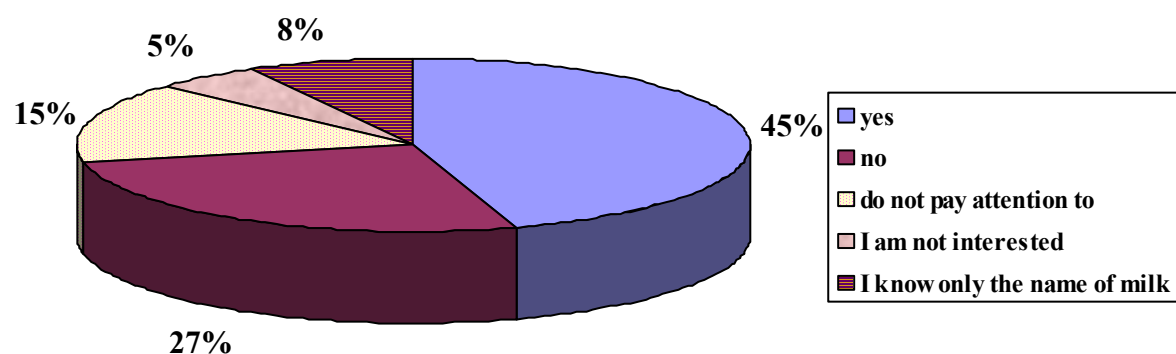
Surprising replies were got to the question – how much people were ready to pay for the milk of good quality, see Figure 7.

According to Figure 7, in general respondents are ready to pay higher price for one litre of milk than the present price, and the multi-branch com-



Source: multi-branch company *Daugava*.

Fig. 7 How much are you ready to pay for one litre of higher quality milk, LVL?



Source: data from author made questionnaire.

Fig. 8 Do you know the name of the company producing milk you regularly buy?

pany Daugava that offered elite milk in special packing – in glass bottles and made purchasers to pay attention to the quality of milk has successfully used this opportunity. Knowing the qualities and peculiarities of the products made by the company *Daugava* that differ from other relatively similar food products offered in the market, it is clear that *Daugava* cannot compete with these products using the same or similar packing. Not only conceptually new product has to be developed, but also revolutionary untraditional packing has to be offered – perfection that radically differs from products available on the store shelves – something that attracts addition attention.

The author made additional inquiry with the aim to find out whether milk purchasers were aware of milk labels and whether they know the milk producer. 120 purchasers who consider milk as a product of everyday use and buy it regularly were questioned. The questionnaire showed the following results.

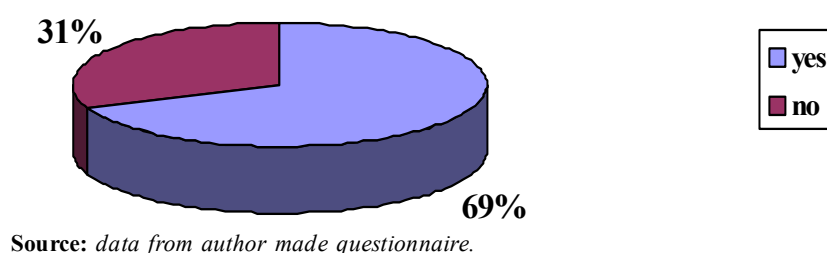
As it is shown in Figure 8, 45% of respondents know the name of the company, however many of them either do not know the company name or do not pay attention to it. This case proves a favourable situation for the development of private label. According to marketing specialist K.Kozgunov (Козгунов К, 2005) it is possible to create and develop private label in cases when

the consumers' attention is divided or not directly focused on products or goods produced by a concrete company.

Figure 9 shows that 69% of respondents pay attention to the externals and packing of milk; thus this factor is used by the developers of private labels, since visually attractive and characteristic label draws attention and consequently becomes recognised by the purchasers.

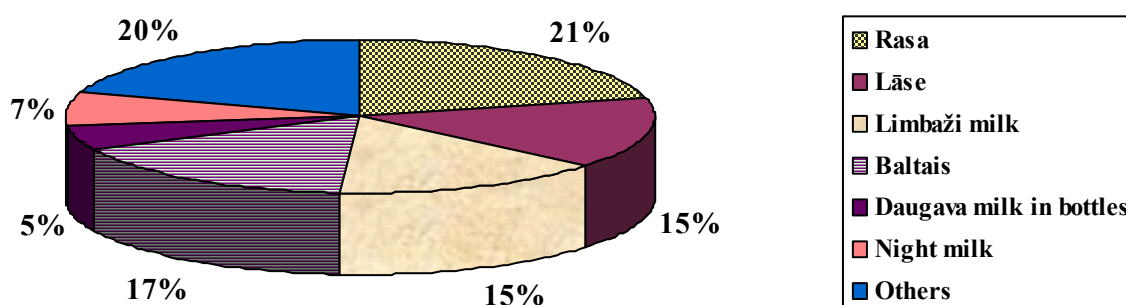
The majority of purchasers know such names as *Rasa* and *Lāse*, yet milk produced by the company *Daugava* and packed in glass bottles is less popular. This can be explained by the structure of respondents, as 60% of them were young people with steady income lower than LVL 250 per month. The situation is radically different in a group of respondents with higher level of income. Therefore it may be concluded that purchasers with higher income choose products with exclusive or elite private label and the demand for milk labels may increase with the increase of the living standard.

Regardless of the positive attitude of consumers towards private labels, it has to be considered that the main developers of product labels are milk-processing companies in cooperation with sales companies. Since such cooperation shall be based on mutual profitability, the main benefits and risks related to the introduction of private label for milk were evaluated and summarised.



Source: data from author made questionnaire.

Fig. 9 Do you pay attention to packing and its externals when you buy milk?



Source: data from author made questionnaire.

Fig. 10 What private labels (names) do you know?

When evaluating these benefits and risks, milk-processing companies have to make a decision on the establishment of private labels and more active marketing, as according to the European practice in sales of milk and milk-based products, 20-25% of sold milk is being sold thanks to private labels.

### Conclusions:

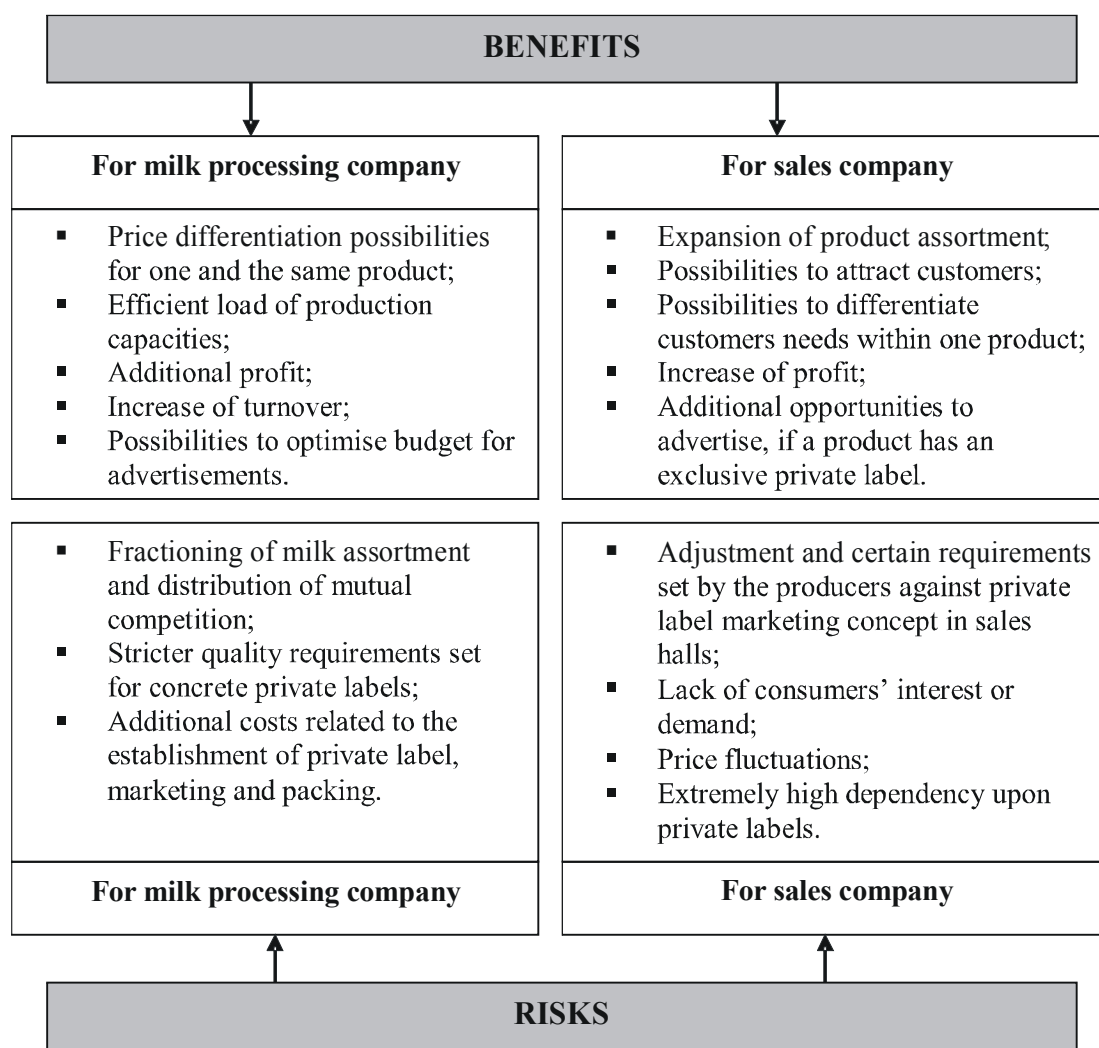
■ In Latvia between 1998 and 2004 the volume of produced milk is unsteady, however the proportion of produced and processed milk has increased, where in 1998 almost half or 48.8% of the produced volume was transferred for processing, while in 2004 already 61.3% of the produced milk volume was processed.

■ The production of pasteurised milk is directly affected by the fluctuations of milk sales price, which is also proved by the correlation coefficient  $r=0.98$ ;

■ A new notion of marketing – *private label* that is directly applied to milk is being advertised and used to expand milk sales opportunities.

■ In 2005 according to sales representatives, a multi-branch company *Daugava* has performed the most successful milk marketing idea, i.e., to sell milk as glassed products and develop it as an exclusive product having a certain idea – *natural (alive) products*.

■ The questionnaire shows that the majority of respondents associate the notion *natural (alive) products* with products, which have preserved their biological qualities, however only 14%



Source: author made figure.

Fig. 11 Enumeration of the main benefits and risks for milk-processing and sales companies due to the production and sales of milk with private labels

of respondents associate such products with the products made in Latvia.

■ In general the questioned respondents are ready to pay higher price for one litre of milk than the present price, and the multi-branch company Daugava that offered elite milk in special packing – in glass bottles and made purchasers to pay attention to the quality of milk has successfully used this opportunity.

■ The majority of purchasers know such names as *Rasa* and *Lāse*, yet milk produced by the company *Daugava* and packed in glass bottles is less popular. This can be explained by the structure of respondents, as 60% of them were young people with steady income lower than LVL 250 per month. The situation is radically different in a group of respondents with higher level of income.

### Proposals:

■ Milk processing companies shall more actively participate in the development and advertisement of milk labels, thus enhancing diversification of milk sales and increase of competitiveness.

■ Sales companies shall more actively participate in cooperation with processing companies to enhance customers' choice in favour of Latvian milk labels.

■ It is advisable to pay attention to various milk sales ideas - made in Latvia, healthy products, biologically active products etc.

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### Piena realizācijas dažādošanas iespējas izmantojot produkta marku

*Raksta pamatā ir pētījums par piena realizācijas iespējām izmantojot produkta markas attīstīšanu pienam. Tika veikta aptauja, kas pamato pircēju izvēli un iespēju šādu produktu marku attīstīt. Kā pozitīvs piemērs minēta daudznozaru kompānijas Daugava pieredze ekskluzīvas piena produkta markas izveidē. Neskatoties uz pozitīvo patērētāju attieksmi pret produktu markām, jāņem vērā aspekts, ka*

galvenie produkta markas attīstītāji ir piena pārstrādes uzņēmumi sadarbībā ar tirdzniecības uzņēmumiem. Šādaī sadarbībai jābalstās uz savstarpēja izdevīguma pamatiem, līdz ar to tika izvērtēti un apkopoti galvenie ieguvumi un zaudējumi ieviešot produktu marku pienam.

Pieaugot piena un piena produktu tirgum ES līmenī, ir novērojamas pretrunīgas tendences, kas bieži vien ir saistītas ar globāliem konsolidācijas procesiem piena ražošanā un pārstrādē. Šobrīd priekšplānā izvirzās vairāki faktori, kas ietekmē piena un piena produktu patēriņu noteiktā reģionā un tie ir patērētāju informētība, mārketinga tendences, pārtikas produktu lietošanas priekšrocības, pirkšanas ērtums, piena produktu tirgus attīstības stadija un reklāma piena produktu veselīgumam.

Taču ņemot vērā iepriekš minētos faktoros, piena produkti, kā min daudzi mārketinga speciālisti (Dž. Smits, 2005; K.Kozgunovs, 2005; A.Borodins, 2004), ir produkti ar samērā ierobežotu realizācijas dažādošanas pakāpi. Šo ierobežotību var pārvarēt izmantojot inovatīvu pieeju vai nu produktu ražošanas tehnoloģijai vai pasniegšanas veidam, kuru savukārt nosaka mārketinga inovatīvās pieejas.

Šī pētījuma ietvaros tiek uzsvērtas dažas no

šīm iespējām, kuras var izmantot Latvijas piena ražotāji un pārstrādātāji, lai celtu piena un piena produktu konkurētspēju Eiropas līmenī.

Pētījuma **mērķis**- balstoties uz pašreizējo situāciju piena realizācijā izvērtēt un izpētīt piena realizācijas dažādošanas iespējas izmantojot produkta marku.

#### **Pētījumā izmantotās metodes un materiāli:**

Pētījumā izmantotas sekojošas metodes- monogrāfiskā, datu grupēšanas un analīzes metode, korelācijas un regresijas analīze, aptaujas metode- patērētāju viedokļa noskaidrošanai un piena realizācijas vēlmju apzināšanai, ekspertu intervijas- noskaidrojot vadošo Latvijas piena pārstrādes kompāniju viedokli par piena realizācijas problēmām un risinājumiem.

Izmantotie materiāli- teorētiskā literatūra mārketinga pētījumos (Anderson E.,Coughlan A.T(1987), Cateora P.R (1990), Бородин А. (2004) un citi) literatūra par jaunākajiem sasniegumiem un tendencēm piena ražošanas un mārketinga jomā (Козгунов К. (2005), Смум Дж. (2005), Belinska I. (2005) un citi) piena pārstrādes uzņēmumu sniegtā informācija (Daudznozaru kompānija Daugava, A/s Rīgas piena kombināts, A/s Tukuma piens u.c.)

## **The Choice of an Optimum Ploughing and Sowing Aggregates for Different Scopes of Work**

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### **Abstract**

The article deals with an issue of the choice of a machine and tractor aggregate from the aspect of its economic expediency. A model has been developed for finding an optimum of variable costs on the basis of their minimisation as a function of the working width and the corresponding scope of work. Solver, a superstructure of MS Excel, was used for solving it as a task of optimising non-linear programming. Design data which characterise the sowing and ploughing aggregates by minimum variable costs and the corresponding scope of work are presented.

**Key words:** Optimisation, specific costs, working width, aggregate.

### **Introduction**

Currently there is a sufficiently wide choice on the market of agricultural machines that can be aggregated with tractors forming a great number of machine and tractor aggregates characterised by different energy intensity and efficiency. The offer of machines for agricultural production is continuously growing, the engineering parameters of the aggregates being different. In such a situation it is important to make a correct choice of an aggregate. Specifically that by the size of the areas under crop, the farms of Latvia have a great dispersion rate. For instance, the number of farms with the areas of 20.1-50.1 ha amounts to 3.7% of the total number, with their area under crop being 14.0% of the total area; for farms with the areas between 50.1 and 100.0 ha - the respective figures are 1.4% and 11.7%; and for the farms which areas exceed 300 ha – the respective figures are 0.3% and 24.5% [Lauku saimniecības..., 2004.]. This applies to farms engaged in the production of grain, where the area under crop constitutes 50.3% of the total area under crop of all the farms engaged in different fields of agricultural production. Since the farm areas under crop are so different, the technical means will also differ considerably by their power and efficiency. Thus an economically motivated choice of a machine and tractor aggregate is one

of the most important tasks to ensure the output of competitive products.

In order to make a decision on the purchase of machines, a method for the choice of a tractor aggregate considering its price, the scope of work, and efficiency by minimising the function of specific variable costs and using a computer software MS Excel has been worked out.

### **Materials and methods**

The aim of the article is to develop a method for the determination of the optimum value of specific variable costs, the corresponding scopes of work for a particular tractor aggregate by means of economic and mathematical optimisation methods, as well as to give recommendations for the producer of agricultural machines under the current market conditions of agricultural machines to be able to make a motivated choice of a tractor aggregate in compliance with the requirements and conditions of the farm.

To achieve the set aim, it is necessary to determine the mathematical structure of the optimisation model to be created and express the variable costs as a function of the working width and the corresponding scope of the performed work. It is also necessary to prepare a tabular version of the optimisation model of the presented variable costs for the calculation by means of a computer software MS Excel.

## Results and discussion

The essence of the method for the choice of a tractor aggregate is the determination of minimum specific variable costs for the corresponding scope of work according to one of the basic parameters – the working width. A particular case of choosing the sowing and ploughing tractor aggregate is used for the discussion of this method.

At first, we will deduce a model by means of which it is possible to find the optimum specific variable costs according to an accepted parameter of the tractor aggregate.

To calculate the minimum specific variable costs, it is necessary to express them as a function of the working width of the tractor aggregate for the corresponding scope of the performed work. It is expressed as:

$$Z = F(a, p, q, a_1);$$

The scheme of the mathematical model for the function of the variable costs is presented in Figure 1.

Let us consider the constituents of the minimisation function – the model characterising the specific variable costs.

$a = f(c, b, \alpha, \Omega)$  – specific depreciation deductions relating to an agricultural machine, where:

$c$  – value of a unit of the working width of an agricultural machine;

$b$  – working width;

$\alpha$  – depreciation coefficient;

$\Omega$  – scope of work.

Changing the working width of an agricultural machine leads to the change of its price and, consequently affects the value of variable

If the agricultural machine performs other operations as well, then the coefficient of the spe-

cific share of the operation is also included into the total scope of the performed work.

$p = f(\gamma, v, b, \tau)$  – specific salary, where:

$\gamma$  – hourly rate;

$v$  – speed of the movement of the aggregate;

$b$  – working width of the aggregate;

$\tau$  – coefficient of the use of the working time.

$q = f(\theta, v, b, \tau)$  – specific consumption of fuel, where:

$\theta$  – hourly consumption of fuel;

$v$  – speed of the movement of the aggregate;

$b$  – working width of the aggregate;

$\tau$  – coefficient of the use of the working time.

$a_1 = f(c_1, \omega, v, b, \tau)$  – specific depreciation deductions per tractor, where:

$c_1$  – price of the tractor;

$\alpha$  – depreciation coefficient;

$\omega$  – annual loading of the tractor in hours;

$v$  – speed of the movement of the aggregate;

$b$  – working width of the aggregate;

$\tau$  – coefficient of the use of the working time.

All the constituent minimisation functions of the specific variable costs depend on the working width of the tractor aggregate.

Deductions for repairs and maintenance are calculated proportionally to the performed work. They are not included into the discussed function of specific variable costs since they are not connected with the working width of the aggregate.

The use of the function allows to draw a dependence graph between the specific variable costs, the working width of the aggregate and the given value of the scope of the performed work in order to determine the character of the dependence. The case is considered in Figure 1 (the basic input data for the discussed example: the scope of work - 200 and 500 ha; the price of one metre of

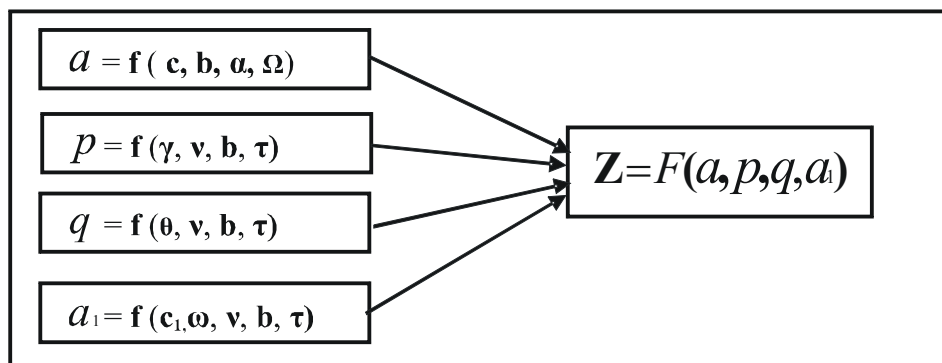


Fig. 1 The scheme of the model for the minimisation function of variable costs

the working width of a sowing machine – LVL 3500; the price of a tractor – LVL 51330; the annual loading – 1200 h; the technological speed of the movement of the aggregate – 11 km/h; the price of fuel – 0.45 LVL/kg without the returned excise tax; the salary – 1 LVL/h, etc.).

It is evident from Figure 2 that the dependence of the presented specific costs on the working width of the aggregate is not of a linear character. The segments of the curves drawn as thick lines represent the optimum values of the specific variable costs; they have a valley for the respective working width of the aggregate and the scope of work. The optimum working width of the aggregate increases with the increase in the scope of the performed work, which indicates in this case the expediency of the use of expensive machines. The performance of huge scopes of work by aggregates having great working width is economically more profitable than the respective performance by several aggre-

gates having narrow working width (expenses increase on salaries, consumption of fuel, etc.). It is obvious from Figure 2 that the use of machine and tractor aggregates to perform great scopes of work is characterised by the fact that the variable costs change slower than their optimum value. The prices of aggregates, as well as, affect the character of variable costs: the higher is their specific price, the more they stand out against the aggregates of lower prices (see Figure 3).

The optimum value of specific variable costs can be determined by means of the minimisation model described above in case its function is differentiated and equated to 0. Yet it is possible to avoid the use of the formulae which, when some assumptions are changed, may be unacceptable, but the superstructure Solver of the software MS Excel can be used to solve it as an optimisation task of a non-linear programming.

Tables 1 and 2 show the optimisation results of specific variable costs at the respective scopes

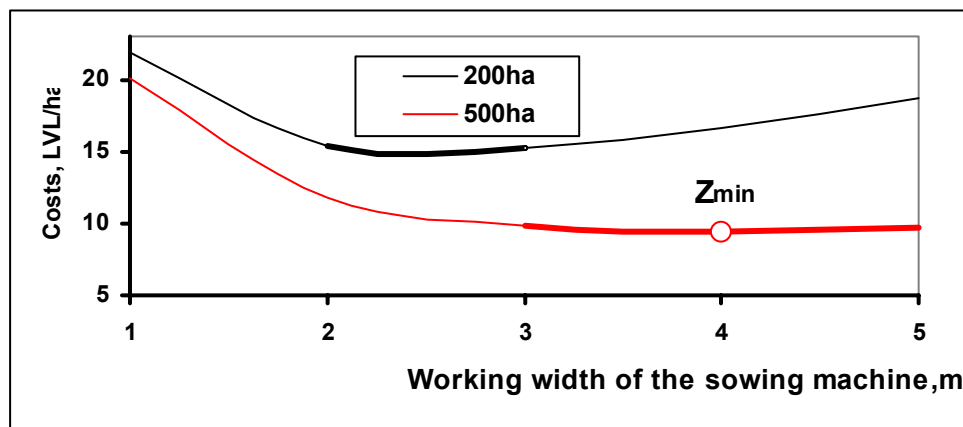
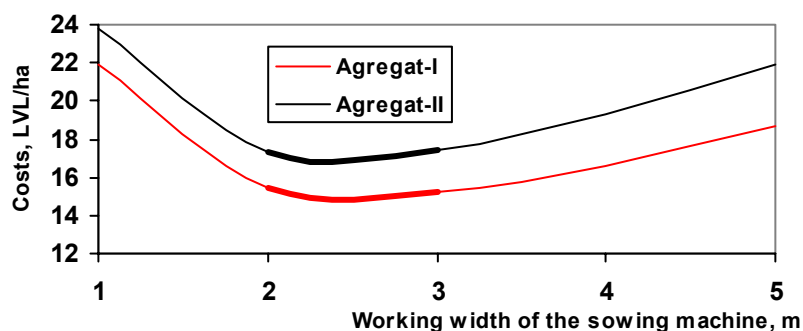


Fig. 2 Changes of variable costs depending on the working width of the sowing machine



Note: The price of Agregat-II is higher by 20%.

Fig. 3 Changes in the specific variable costs depending on the prices of the aggregates (the scope of work 200 ha)

of work (Figures 3 and 4) for various sowing and ploughing aggregates.

General input data for sowing and ploughing aggregates are the following: the working width; the price of the sowing machine, the plough and the tractor (presented in Tables 1 and 2); the coefficient of the depreciation deductions - 0.17 for the sowing machine and the tractor; the annual loading of the tractor - 1200 h; the price of fuel – 0.45 LVL/kg, without the excise tax; the salary - 1 LVL/h; the technological speed - 11 km/h of the aggregate (Mc CORMICK MTX-200+ Accord

Kverneland MSC- 14 km/h), for the ploughing aggregates - 8 km/h.

Restrictions on the variable working width - **b** should exceed 0 to avoid senseless variants when they are checked, which will lead to the division error by 0 when the specific salary, the specific fuel consumption and other indices are calculated. For the sowing aggregates it is accepted that **b** ≥ 1 but for the ploughing aggregates **b** ≥ 0.35.

The data of Tables 1 and 2 confirm the conclusions laid out for the analysis of the optimisation function. They also enable making a

Table 1

**Minimum variable costs for various sowing machines**

| Description of aggregate                  | Working width, m | Scope of work, ha | Costs, LVL/ha | Price of the sowing machines, LVL | Price of the tractor, LVL |
|-------------------------------------------|------------------|-------------------|---------------|-----------------------------------|---------------------------|
| <b>1</b>                                  | <b>2</b>         | <b>3</b>          | <b>4</b>      | <b>5</b>                          | <b>6</b>                  |
| MTZ 952+Accord Kverneland DA              | 2.5              | <b>335</b>        | <b>6.39</b>   | 6300                              | 9661                      |
| MTZ 952+Accord Kverneland DA              | 3                | <b>560</b>        | <b>5.32</b>   | 8750                              | 9661                      |
| John Deere 7810+ Accord Kverneland DAX    | 4                | <b>428</b>        | <b>9.46</b>   | 11900                             | 51330                     |
| John Deere 7810+ Accord Kverneland DV     | 5                | <b>785</b>        | <b>7.58</b>   | 17500                             | 51330                     |
| Direct sowing machine                     |                  |                   |               |                                   |                           |
| Mc CORMICK MTX-200+ Accord Kverneland MSC | 4                | <b>1350</b>       | <b>7.9</b>    | 31500                             | 60298                     |

Table 2

**Minimum variable costs for various ploughing aggregates**

| Description of aggregate  | Working width, m | Scope of work, ha | Costs, LVL/ha | Price of the plough, LVL | Price of the aggregate LVL |
|---------------------------|------------------|-------------------|---------------|--------------------------|----------------------------|
| <b>1</b>                  | <b>2</b>         | <b>3</b>          | <b>4</b>      | <b>5</b>                 | <b>6</b>                   |
| MTZ 952+AB100             | 1.00             | <b>40</b>         | <b>21.98</b>  | 2590                     | 9661                       |
| MTZ 952+ AB100            | 1.50             | <b>80</b>         | <b>14.67</b>  | 3464                     | 9661                       |
| John Deere 7810+ EM100    | 1.80             | <b>115</b>        | <b>28.99</b>  | 9824                     | 51330                      |
| Mc CORMICK MTX-200+ EM100 | 2.25             | <b>225</b>        | <b>17.16</b>  | 11364                    | 60298                      |
| Mc CORMICK MTX-200+ EG85  | 2.70             | <b>405</b>        | <b>14.29</b>  | 17013                    | 60298                      |

motivated choice of a tractor aggregate in compliance with the requirements and conditions of the farm. What are the limits to the scope of work when a particular tractor aggregate is economically efficient? According to Tables 1 and 2, and Figure 3 it is also possible to determine the period in which the particular work is completed if the values are divided by the efficiency of the corresponding aggregate.

One should also remark the following. If a farm already has a tractor, then it is necessary to meet the following condition when choosing an agricultural machine: the working width  $B_{opt}$  obtained as a result of optimisation should correspond to the possible working width by the efficiency  $B_N$  of the existing tractor i.e.  $B_{opt} \leq B_N$ .

Acquisition of such information will enable the producer to make a motivated choice of a machine and tractor aggregate taking into account the scope of his work and capital investments, the salaries and their impact on the prime cost of the product.

## Conclusions

1. The presented optimisation model of specific variable costs allows the producer to obtain agricultural information on:

- a machine and tractor aggregate, its economic efficiency considering the current scope of work and the time of its completion;
- the impact of costs on the prime cost of the product and the efficiency of capital investments.

2. The proposed method for the assessment of the machine and tractor aggregates will allow:

- to determine the allowable deviation value of the working width from its optimum value which does not essentially affect the costs at its choice;
- to make motivated decisions when choosing and purchasing machine and tractor aggregates considering their economic expediency.

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## The choice of an optimum ploughing and sowing aggregates for different scopes of work

At present the choice of agricultural machines on the market is comparatively wide. The aggregation of agricultural machines with tractors allows to make various machine and tractor aggregates with different energy provision and efficiency. As the technical parameters of the aggregates differ, it is important to evaluate the choice of aggregates considering the conditions for their efficient use.

Therefore the choice of an economically motivated machinery and tractor aggregate is one of the most important tasks in order to ensure competitive production. It is necessary to clarify a method for the correct choice.

The paper deals with a method for the choice of aggregates considering their economic profitability; a model for the optimisation of variable costs has been developed on the basis of cost minimisation by means of the software MS Excel and solving it as an optimisation task of a non-linear programming.

The evaluation method of tractor aggregates elaborated taking into consideration their economic profitability provide a possibility to find the optimum aggregate according to the value of variable costs and the scope of performed work, which is an important basis for competitive production.

## *Optimālu augsnes apstrādes un sējas agregātu izvēle dažādiem darba apjomiem*

*Pašreiz lauksaimniecības mašīnu tirgū ir pietiekami liela mašīnu izvēle. Lauksaimniecības mašīnas agregatējot ar traktoriem, var izveidot dažādus mašīnu-traktoru agregātus, kas atšķiras ar energonodrošinājumu un ražīgumu. Tā kā agregātu tehniskie parametri ir dažādi, tādā situācijā agregātu izvēlei ir svarīgi tos novērtēt, ņemot vērā apstākļus to efektīvai lietošanai.*

*Tāpēc ekonomiski pamatota mašīnu-traktoru agregāta izvēle ir viens no svarīgākajiem uzdevumiem konkurētspējīgas produkcijas ražošanas nodrošināšanai. Nepieciešams izziņāt izvēles metodi.*

*Darbā apskatīta metode mašīnu-traktoru agregāta izvēlei, ievērojot ekonomisko izdevīgumu; izstrādāts modelis mainīgo izmaksu optimizācijai uz to minimizācijas pamata,*

*izmantojot programmu MS Excel un risinot to kā nelineārās programmēšanas optimizācijas uzdevumu.*

*Izstrādātā traktoru agregātu novērtēšanas metode, ievērojot ekonomisko izdevīgumu, dod iespēju izvēlēties optimālo agregātu pēc mainīgo izmaksu lieluma un attiecīgā izpildāmo darbu apjoma, kas ir svarīgs konkurētspējīgas produkcijas ražošanas pamats.*

## Coherence between the Structure (Diversification) of Agricultural Companies and their Economic Size

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### Abstract

The paper focuses on the analysis of regularities experienced by the companies due to the change of their economic size.

The research has led to the conclusion that labour productivity depends on the size of the analysed farms, as well as the proportion of the crop farming sector has a tendency to grow with the increase of the farm size.

**Key words:** agriculture, diversification, entrepreneurship, economic size.

### Introduction

The previous provisional analysis of the information provided by the Register of Enterprises and statistics shows an extreme contradiction between the specialization of farms and diversification processes and their connection with the size of farms. Several authors have partially studied these problems and published some of the results (Gulbe, 2004; Ramanovskis, 2004; Jance, 2005; Jirgena, 2004; Cartilage, 2005; Baraškina, 2004, etc.).

However the studies done do not answer many questions arisen due to the study and evaluation of the processes, as well as the analysis of the statistics or information provided by the Register of Enterprises.

Comparative analysis of some of the main macroeconomic indicators was done for the purpose of the research programme (see Table 1).

Obviously the positive processes in the primary sphere are dynamic - in nine years the value added has increased by 23.9%, while the number of employed persons has decreased by 17%, consequently the value added per one employed person has increased by 49.3%. However, the total labour productivity in agriculture and forestry still is very low and much lower than in other sectors.

These aspects served as the basis for the search of factors promoting higher labour productivity in agriculture and the influence of which should be encouraged. These reasons became a constituent part for the hypothesis of our research.

Subsequently the information compiled and processed by FADN and based on proper farm accountancy data would be valuable. Such results

Table 1

### Labour capacity and productivity in the primary sphere of Latvia between 1995 and 2004

| Indicators                                                                                                       | 1995    | 2000    | 2004    |
|------------------------------------------------------------------------------------------------------------------|---------|---------|---------|
| Total value added of agriculture, hunting and forestry, mln. LVL, in prices of 2000                              | 166.8   | 173.6   | 206.7   |
| Employed in agriculture, forestry and hunting, thou.                                                             | 159     | 134     | 132     |
| Value added by these sectors per one employed person: <i>LVL</i>                                                 | 1049.06 | 1295.52 | 1565.91 |
| %                                                                                                                | 100.0   | 123.5   | 149.3   |
| Proportion of value added of these sectors in the total value added, %                                           | 8.6     | 4.2     | 4.0     |
| Proportion of persons employed in these sectors in the total number of employed in national economy of Latvia, % | 16.7    | 14.2    | 13.0    |

**Source:** Calculations done by the authors according to the statistical data.

of the research are especially necessary for the adjustment of financial support policy and tactics in agriculture.

These considerations and aspects determined the choice of theme and the **research hypothesis**: greater progress in agriculture of Latvia could be achieved by maximum support to the development of strong, technologically updated, specialized, and successfully diversified agricultural enterprises and business companies.

**The aim of the research** for the verification of such a hypothesis: to study the regularities experienced by agricultural companies due to the change of their economic size and sectoral structure.

**The objectives** advanced for the achievement of the set aim:

- to clarify the coherencies between the economic size of agricultural business companies and productivity of invested labour;
- to analyse the structure of production sectors of agricultural business companies and coherencies related to their economic size;
- to study the coherencies among the economic size, land areas and some results of management in agricultural business companies.

### Materials and methods used

The summary of Latvian farm accountancy statistics compiled and published in 2005 (Lauku saimniecības ...2004, 2005) under the guidance of Dr.oec. Valda Bratka and the Department of Farm Economy, and financed by the Ministry of Agriculture of the Republic of Latvia and Latvian State Institute of Agrarian Economics have been used for the achievement of the research objectives.

The information on enterprises and business companies for the years 2002 and 2003 was used for the verification of stability and veracity of indicators.

In addition rural farm structure survey compiled by the Central Statistical Bureau (*Structure of rural farms economies...2006 and 2004*) is used.

The data of agricultural census have been used for the comparative internal analysis (*Latvijas 2001.gada lauksaimniecības... 2003*).

The sources of scientific literature and authors are included into the list of references.

The **method of grouping** of rural farms (enterprises and business companies) based on the groupings published by the above mentioned authors (*V.Bratka, etc., 2005.*) has been used for the

solution of the set objectives. The grouping of agricultural companies (statute companies) has been chosen out of the total sample set of farms. The mentioned farms were chosen to clarify the range of their production capacity and economic size, as well as the change of their structure due to the change of economic size.

Besides the multiform structure of business companies engaged in agricultural activities of Latvia was considered, i.e., the mentioned structure comprises both statute companies founded long ago and established as successors of socialistic collective farms and quite recently founded companies established due to a continuous transformation of an individual agricultural company (farm) into a limited liability company of one or several owners.

The calculations of dynamics rows are used for the analysis.

The indicator of branch groups (agriculture, forestry, processing, etc.) calculated for the value of production was used for the study of branch industry structure.

The following indicators as the profundity of specialisation (proportion of the main sector), productivity of cultivated plants, number of cows, and quality of sold milk which is characterised by the sales prices of milk are used for the assessment of economic results achieved by business companies of different size.

The research is done according to the data of 2002, since statute companies have not been specified in FADN data for the last two years. Therefore the analysis was done for all farms of the sample set according to the data of 2004 to compare the revealed regularities.

In addition according to the data of 2002 an especial analysis is done for Kurzeme region due to its specific ecological conditions.

### Results and discussion

#### 1. Coherence of the dynamics of labour productivity with the size of farms and branch variety in agricultural enterprises and business companies

Labour productivity as the priority indicator is preferred, since it characterises:

- success or level of specialisation of branch diversification;
- technical and technological level of production;
- competitiveness of farms.

The dynamics of labour productivity in the rural farms of Latvia is characterised by the calculations included into Table 2.

According to Table 2, in general more rapid increase in agricultural labour productivity has been experienced in recent years, while no positive changes are observed in the main sectors – cultivation of grain and milk livestock breeding.

The analysis of factors affecting the specialisation of farms shows that the proportion of crop farming sectors increase with the increase

of the size of farms. It is sufficiently and briefly proved by the proportion of crop sowings for animal husbandry. The analysis evidences that the proportion of crop farming sectors in small (5–10 ha UAA) farms amounts to only 45%, while in larger and large ( $\geq 100$  ha UAA) farms it increases up to 78 – 80 per cent.

Several conclusions and generalisations may be drawn according to the data of rural farms and calculations done by the authors and summarised in Table 3:

Table 2

**Dynamics of labour productivity in agriculture of Latvia for the period 2000- 2004**

| Indicators                                                              | 2000    | 2001    | 2002    | 2003    | 2004    |
|-------------------------------------------------------------------------|---------|---------|---------|---------|---------|
| Agricultural produce per one person employed in agriculture, <i>LVL</i> | 2213.64 | 2368.08 | 2404.08 | 2837.04 | 3459.09 |
| %                                                                       | 100     | 107.0   | 108.6   | 128.2   | 156.3   |
| Amount of grain produced per one person employed, <i>t</i>              | 7.0     | 6.6     | 7.0     | 6.9     | 8.0     |
| Milk produced per one person employed, <i>t</i>                         | 6.2     | 6.0     | 5.5     | 5.8     | 6.0     |

Source: Calculations done by the authors according to the Central Statistical Bureau (*Latvijas lauksaimniecība 2004.gadā*).

Table 3

**Coherence of labour productivity with the economic size of rural farms by statute companies of Latvia according to the sample set of FADN**

| Indicators                                                 | Groups of farms by the European economic size |          |           |            |        |
|------------------------------------------------------------|-----------------------------------------------|----------|-----------|------------|--------|
|                                                            | 8 - <18                                       | 16 - <40 | 40 - <100 | 100 - <250 | >250   |
| Labour force input – agricultural work units (AWU)         | 8.5                                           | 11.6     | 20.0      | 46.5       | 106.5  |
| %                                                          | 100                                           | 136.5    | 235.3     | 547.1      | 1252.9 |
| Increase of chain, %                                       | -                                             | 36.5     | 72.4      | 232.5      | 229.0  |
| Production per one AWU: <i>LVL</i>                         | 1921                                          | 5737     | 6775      | 6883       | 15425  |
| %                                                          | 100                                           | 289.6    | 352.7     | 358.3      | 802.9  |
| Increase of chain, %                                       | -                                             | 198.6    | 18.1      | 1.6        | 124.1  |
| Labour force input in agriculture: AWU                     | 8.5                                           | 9.8      | 15.9      | 41.2       | 104.7  |
| %                                                          | 100                                           | 115.3    | 187.1     | 494.7      | 1231.8 |
| Increase of chain, %                                       | -                                             | 15.3     | 62.2      | 159.1      | 154.1  |
| Agricultural produce per one AWU: <i>LVL</i>               | 1209                                          | 2994     | 4528      | 6829       | 13640  |
| %                                                          | 100                                           | 247.6    | 374.5     | 564.8      | 1128.2 |
| Increase of chain, %                                       | -                                             | 147.6    | 151.2     | 150.8      | 199.7  |
| Proportion of agricultural produce obtained per one AWU, % | 62.9                                          | 52.2     | 66.8      | 99.2       | 88.4   |
| Proportion of agricultural work, %                         | 100.0                                         | 84.5     | 79.5      | 88.6       | 98.3   |
| Net value added per one AWU: <i>LVL</i>                    | 752                                           | 1554     | 1416      | 2117       | 3299   |
| %                                                          | 100                                           | 206.6    | 188.3     | 281.5      | 438.7  |

Source: FADN (2002) and calculations done by the authors.

■ the larger and economically stronger farm, the higher labour productivity – higher value of production per each agricultural work unit: in the group of the largest farms the value of production per each AWU is eight times larger than the respective value in the group of small farms.

■ labour force input in agriculture is very different:

- in the smallest farms the whole work is invested in agriculture which means that there are no non-agricultural sectors or production units in these farms;
- the proportion of agricultural labour force in Group 2 comprises 84.5% which proves the existence of other sectors or occupation in these farms;
- diversification in Group 3 is even more developed, as the proportion of agricultural work constitutes only 79.5%;
- there are no or there are very few non-agricultural sectors or activities performed in the last group or group of the largest farms, where agricultural work constitutes already 98.3 % of total labour force input.

■ agricultural work productivity is extremely different by the groups of analysed farms:

- the production of agricultural produce per one AWU in Group 1 is 2.5 times less than in the group of larger farms;
- rapid increase in agricultural work is seen in Groups 3 and 4, while the value of agricultural production per each AWU in the group of the largest farms is 11.3 times larger than in Group 1 and 4.6 times larger than in Group 2. It means that large and the largest farms have and use highly efficient machinery and equipment, while manual labour prevails in the small farms.

■ the evaluation of the calculated economic efficiency of invested labour also shows radical differences (see item *net value added per one AWU* in Table 3).

Similar regularities were observed due to the analysis of labour productivity indicators for Kurzeme region (see Table 4).

The following differences are distinguished according to the information of Table 4:

- labour productivity in the groups of smaller farms is twice lower than labour productivity in the farms of average economic size;
- large proportion of non-agricultural sectors is observed in the group of average size farms;
- the obtained values of agricultural produce, calculating per one AWU invested in agriculture, evidence diverse regularities: labour productivity in larger farms is much higher, while the results of farms of average size proves that the productivity of agricultural labour might be higher also in diversified farms;
- also different levels of net value added show regular and consistent dissimilarities.

## 2. Impact of the economic size of business companies on the structure of their sectors

Next the level of diversification for business companies (statute companies) of different economic size and included into the data base of FADN was studied.

The structure of sectors by business companies of different size is radically different, as it is shown in calculations and FADN data included into Table 5:

- in Group 1 or in the group of small farms the agricultural produce amounts to less than two thirds and there is no production of other sectors,

Table 4

### Coherence between the economic size of agricultural companies and labour productivity in Kurzeme region

| Indicators                                                  | Groups of farms by economic size |         |          |
|-------------------------------------------------------------|----------------------------------|---------|----------|
|                                                             | 16- <40                          | 40-<100 | 100-<250 |
| Labour force input: <i>AWU</i>                              | 11.8                             | 30.7    | 37.1     |
| Labour force input in agriculture, <i>AWU</i>               | 11.1                             | 15.8    | 36.8     |
| Proportion of labour force input in agriculture, <i>LVL</i> | 94.1                             | 51.5    | 99.2     |
| Input of agricultural produce per one AWU, <i>LVL</i>       | 3494                             | 4823    | 5746     |
| Net value added per one AWU, <i>LVL</i>                     | 930                              | 1016    | 2442     |

Source: Calculations done by the authors according to the data of FADN.

Table 5

**Structure of production sectors of agricultural companies by the value  
of production in Latvia**

| Indicators                                           | Average<br>in Latvia | Groups of farms by the European economic size |          |          |            |          |
|------------------------------------------------------|----------------------|-----------------------------------------------|----------|----------|------------|----------|
|                                                      |                      | 8- <16                                        | 16 - <46 | 40- <100 | 100 - <250 | >250     |
| Agricultural produce, <i>LVL</i>                     | 95 381               | 10 278                                        | 29 338   | 72 002   | 281 354    | 1428 092 |
| Proportion of agricultural produce, %                | 78.5                 | 62.9                                          | 44.1     | 53.1     | 87.9       | 86.9     |
| Value added of processing of agricultural produce, % | 3.7                  | 0.2                                           | -        | 1.4      | 3.6        | 5.4      |
| Forestry production, %                               | 0.3                  | -                                             | 0.5      | 0.7      | 0.5        | 0.0      |
| Production of other sectors, %                       | 5.8                  | 0.2                                           | 3.1      | 31.2     | 4.8        | 1.7      |
| Other revenues, <i>LVL</i>                           | 14 153               | 5999                                          | 34 802   | 18 378   | 10 079     | 97 812   |
| %                                                    | 11.7                 | 36.7                                          | 52.3     | 13.6     | 3.1        | 5.9      |

Source: FADN (2002) and calculations done by the authors.

Table 6

**Coherences between the economic size of the sample set of FADN for agricultural  
business companies, land area and the results economic activities in Latvia**

| Indicators                        | Groups of farms by the European economic size |        |         |          |        |
|-----------------------------------|-----------------------------------------------|--------|---------|----------|--------|
|                                   | 8 - <16                                       | 16-<40 | 40-<100 | 100-<250 | >250   |
| Land under property, ha           | 25.5                                          | 44.4   | 79.3    | 243.6    | 498.7  |
| Utilised agricultural area, ha    | 114.8                                         | 313.3  | 532.9   | 869.5    | 1668.3 |
| of which leased area, ha          | 118.7                                         | 276.2  | 463.7   | 654.1    | 1239.0 |
| Proportion of leased area, %      | 83.7                                          | 88.2   | 87.0    | 75.2     | 74.3   |
| Land used for crops, %            | 66.9                                          | 38.7   | 44.3    | 41.7     | 56.2   |
| Wheat yield, t ha-1               | 1.7                                           | 2.6    | 2.7     | 3.4      | 5.1    |
| %                                 | 100                                           | 1529   | 158.8   | 200.0    | 300.0  |
| Number of cows                    | 5                                             | 18     | 64      | 164      | 101    |
| Sales price of milk, LVL/ 1000 kg | 76                                            | 90     | 104     | 109      | 115    |
| %                                 | 100                                           | 118.4  | 136.8   | 143.2    | 151.3  |

Source: FADN (2002) and calculations done by the authors.

while other revenues constitute 36.7%;

- in Group 2 the proportion of the value of non-agricultural production is very small, while other revenues comprise more than a half or 52.3% of all the revenues, thus the rest of revenues come from other economic activities;

- the structure of sectors and revenues sharply change in larger and large business companies: here the proportion of agricultural produce constitutes 87 – 88%, where the revenues from processing of agricultural produce comprise a remarkable share of all revenues, yet the proportion of other revenues in these groups is 6-7 times smaller than for Groups 1 and 2, i.e., small business companies.

The comparative analysis of similar indicators for business companies of Kurzeme region leads to the following conclusions:

- the proportion of agricultural produce in the group of smaller farms also is the lowest one, but the specialisation of Kurzeme farmers is more profound in the group of larger business companies;
- the proportion of forestry is unreasonably low in the group of average farms of Kurzeme region.

**3. Coherence between the economic size of farms and other results of economic activities**

Other economic coherences related to the economic size of business companies are shown in Table 6.

Certain assessment and conclusions may be drawn according to the calculation of Table 6:

- highly marked and negative coherence is observed between the area of land properties and the economic size of a business company: the larger company is, the smaller area of land property on each European Economic Unit is observed;

- in general the proportion of leased utilised agricultural area is high, although it is considerably lower in large farms;

- the main purpose for the use of land in small and large farms is the production of grain (56-67%), while in the group of average size farms dairy and thus consequently the production of forage are the main sectors;

- production of grain, namely, the efficiency of crop farming has a vivid coherence with the size of farms and area for crop farming: the yield of crops in large farms is three times higher than in small farms;

- large farms produce milk of higher quality, which is proved by a consistent growth of milk production prices due to the increase of the economic size of farms.

The corresponding indicators of business companies of Kurzeme region, which are included into the sample set of FADN evidence both coincidences of regularities, as well as some differences:

- here the yield of wheat is the highest (3.7 t ha<sup>-1</sup>) in small business companies;

- small business companies have more definitely preferred dairy sector, as the number of cows amounts to 63 or it is three times more than in the corresponding group of the total sample set included into Table 6;

- in the largest group of Kurzeme farms the number of cows is smaller than in the corresponding groups of Table 5;

- logically the price of milk in the group of

smaller farms is higher than in the corresponding group of the total sample set, while in Groups 2 and 3 the price is lower.

To verify the possibilities of ascription or comparability of the revealed regularities, the grouping analysis for all rural farms of Latvia according to one resumptive indicator – standard gross coverage was performed.

The relative coherence of the data (see Table 7) is convincing: larger farms have higher production efficiency and intensity for the use of land.

### Main conclusions

1. The level of labour productivity depends on the economic size of farms – the labour productivity indicators increase with the increase of the level of farm commercialisation.

2. Diverse features are observed for the input of labour in agricultural sector – large and the largest farms have and use highly efficient machinery and equipment, while manual labour prevails in small farms.

3. The proportion of agricultural produce is very small in the group of small farms, thus the existence of other sectors or activities is proved in these farms.

4. Although recently the general increase of labour productivity in agriculture has been more rapid, no positive changes are observed in the main sectors – crop farming and dairy cattle-breeding.

5. The proportion of crop farming increases with the increase of the farm size.

6. The analysis of Kurzeme region leads to the conclusion that both coincidences of regularities, as well as some differences from the general situation in the country are seen in labour input, labour productivity, and other indicators.

Table 7

### Impact of the economic size of a farm on the results of economic activities in Latvia, all rural farms

| Indicators                                              | Economic size units |        |        |         |        |
|---------------------------------------------------------|---------------------|--------|--------|---------|--------|
|                                                         | 4-<8                | 8-<16  | 16-<40 | 40-<100 | >100   |
| Utilised agricultural area, per one farm on average, ha | 36                  | 73     | 148    | 339     | 828    |
| Standard gross coverage per ha of UAA, LVL              | 101.06              | 100.76 | 109.20 | 120.24  | 274.34 |

Source: Calculations done by the authors according to the data of agricultural census of 2001.

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## Проблемы и пути повышения уровня доходов работников сельского хозяйства республики Беларусь

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### **Abstract.**

В статье проанализирована демографическая ситуация в Республике Беларусь. Представлены данные об основных социально-экономических показателях уровня жизни населения: денежных доходах и расходах, их составе, среднемесячной заработной плате работников сельского хозяйства. Показана динамика развития фермерских и личных подсобных хозяйств. Даны предложения по повышению уровня жизни на селе.

**Key words:** занятость, заработная плата, доходы, расходы.

### **Introduction**

В настоящее время основными проблемами сельского хозяйства республики являются высокие издержки производства и износ техники, низкая производительность труда и конкурентоспособность продукции, сельская бедность и снижение качества сферы услуг. Целью научных исследований является анализ демографической ситуации в сельской

местности и уровня доходов работников сельского хозяйства, а также разработка предложений по повышению занятости сельского населения и уровня их жизни.

### **Results and discussion**

Уровень занятости сельского населения республики в экономике с 1990г. постепенно снижается (табл. 1). Количество сельских

Таблица 1  
**Динамика численности сельского населения Республики Беларусь**

| Показатели                                                                                        | 1990г.  | 1999г.  | 2000г. | 2001г. | 2002г. | 2003г. | 2004г. |
|---------------------------------------------------------------------------------------------------|---------|---------|--------|--------|--------|--------|--------|
| Численность населения Республики Беларусь, тыс. человек                                           | 10189.8 | 10019.5 | 9990.4 | 9950.9 | 9898.6 | 9898.5 | 9849.1 |
| Численность сельского населения, тыс. чел.                                                        | 3449.0  | 3084.0  | 3034.1 | 2976.8 | 2919.8 | 2862.3 | 2803.6 |
| Его удельный вес в общей численности населения Республики Беларусь, %                             | 33.8    | 31.0    | 30.3   | 29.8   | 29.8   | 28.9   | 28.5   |
| Численность населения, занятого в сельском хозяйстве, тыс. чел.                                   | 985.4   | 659.5   | 625.1  | 585.5  | 532.0  | 488.5  | 468.0  |
| Удельный вес населения, занятого в сельском хозяйстве, в общей численности сельского населения, % | 28.6    | 21.4    | 20.6   | 19.7   | 18.2   | 17.1   | 16.7   |

Источник: [7].

жителей, работающих в сельском хозяйстве, сократилось с 985,4 тыс. человек в 1990г. до 468,0 тыс. – в 2004г. или с 28,6% до 16,7% в структуре численности сельского населения.

По данным научных исследований на сельскохозяйственных предприятиях сохраняется избыточная занятость – внутривирободственный резерв рабочей силы, который не используется либо используется не полностью (Лукашевич С., 2002; Скакун А., 2003). В 2002г. уровень неполной занятости в сельском хозяйстве республики составил 2,4% от общего количества сельскохозяйственных работников. При этом наблюдается отток кадров из сельского хозяйства. Коэффициент соотношения численности принятых работников к выбывшим составил в 2001г. 75,3%, а в 2003г. – 81,2% (табл. 2). Этот показатель остается еще довольно высоким. Примерно третья часть освободившихся рабочих мест в сельском хозяйстве не была заполнена и оставалась вакантной.

Следствием избыточной занятости в сельском хозяйстве является наличие вынужденной неполной занятости: неполный трудовой день, сокращенная рабочая неделя, вынужденные отпуска. Наличие избыточных работников

обусловлено большим удельным весом кадров с низкой квалификацией, плохой организацией и нормированием труда на предприятии, высоким износом техники (около 70%) и недостаточным ее количеством и, следствием этого, экономически необоснованными и большими затратами труда на единицу выпускаемой продукции. Следовательно, важной задачей должно стать развитие сельской социальной инфраструктуры, а также возрождение местных самобытных ремесел и промыслов в сочетании с развитием сельского туризма, укрепление личных подсобных и крестьянских (фермерских) хозяйств. Это позволит решить проблему самозанятости сельского населения и повышения его доходов, так как заработная плата работников, занятых в сельскохозяйственном производстве, является самой низкой среди отраслей экономики (около 60% от заработной платы всех отраслей и 51% от заработной платы в промышленности в 2004г.) (табл.3). Цена рабочей силы в сельском хозяйстве не обеспечивает работнику даже его биологического выживания, так как заработная плата составила всего лишь 99% от минимального потребительского бюджета в 2004г.

Таблица 2

**Интенсивность движения работников на рынке труда в сельском хозяйстве**

| Показатели                                                            | Годы |      |      |      |      |      |      |      |      |
|-----------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|
|                                                                       | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| Принято работников, в % к среднесписочной численности работающих      | 9.1  | 12.9 | 13.6 | 14.6 | 14.2 | 14.9 | 14.8 | 16.3 | 19.0 |
| Выбыло работников, в % к среднесписочной численности работающих       | 13.3 | 15.1 | 16.2 | 18.1 | 19.5 | 18.7 | 19.6 | 22.3 | 23.4 |
| Коэффициент соотношения численности принятых к выбывшим работникам, % | 67.5 | 85.7 | 84.0 | 80.8 | 72.6 | 79.4 | 75.3 | 68.2 | 81.2 |
| Число заявленных вакансий по сельскому хозяйству, тысяч человек       | 6.3  | 5.1  | 4.4  | 7.1  | 8.5  | 8.5  | 7.1  | 7.2  | 5.3  |

Источник: [7].

В период с 1990 по 2003 гг. произошло увеличение доли социальных трансфертов, в которые входят пенсии, пособия и стипендии, что свидетельствует о снижении стимулирующей функции доходов. Вместе с тем, довольно резко возрастают доходы от предпринимательской деятельности (в 4 раза). При этом произошло снижение уровня

заработной платы и доходов от собственности в 1,6 раза (табл.4).

В анализируемый период в структуре денежных расходов населения наметились позитивные изменения – значительно возрос удельный вес накопления сбережений населения во вкладах и ценных бумагах (на 10,6%), при этом уменьшилась доля оплаты

Таблица 3

**Динамика соотношения заработной платы работников сельского хозяйства к потребительскому бюджету и к заработной плате в других отраслях, %**

| Показатели                                                                                     | Годы |      |      |      |      |      |      |
|------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|
|                                                                                                | 1996 | 1997 | 2000 | 2001 | 2002 | 2003 | 2004 |
| Отношение заработной платы в сельском хозяйстве к заработной плате в промышленности, %         | 54   | 55   | 50   | 52   | 55   | 51   | 51   |
| к заработной плате всех отраслей, %                                                            | 62   | 62   | 60   | 62   | 64   | 56   | 57   |
| Заработная плата работников сельского хозяйства в % к минимальному потребительскому бюджету, % | 65   | 70   | 60   | 79   | 94   | 83   | 99   |

Источник: Расчеты авторов по данным источника [7].

Таблица 4

**Структура денежных доходов населения Республики Беларусь, %**

| Показатели                                          | 1990г. | 1999г. | 2000г. | 2001г. | 2002г. | 2003г. |
|-----------------------------------------------------|--------|--------|--------|--------|--------|--------|
| Денежные доходы населения – всего                   | 100    | 100    | 100    | 100    | 100    | 100    |
| Оплата труда, включая выплаты социального характера | 73.1   | 54.4   | 51.9   | 50.4   | 48.5   | 46.9   |
| Социальные трансферты                               | 16.2   | 17.9   | 17.9   | 18.9   | 18.9   | 17.7   |
| Доходы от собственности                             | 2.4    | 1.1    | 1.8    | 1.7    | 1.8    | 1.5    |
| Доходы от предпринимательской деятельности          | 8.3    | 26.6   | 28.4   | 29.0   | 30.8   | 33.9   |

Источник: [7].

Таблица 5

**Структура денежных расходов населения Республики Беларусь, %**

| Показатели                                                                         | 1990г. | 1999г. | 2000г. | 2001г. | 2002г. | 2003г. |
|------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|
| Денежные расходы и сбережения населения – всего в том числе:                       | 100    | 100    | 100    | 100    | 100    | 100    |
| Покупка товаров и оплата услуг                                                     | 82.0   | 86.7   | 76.9   | 73.6   | 74.1   | 71.9   |
| Оплата обязательных платежей и добровольных взносов                                | 11.1   | 9.0    | 8.8    | 8.7    | 8.4    | 10.6   |
| Накопление сбережений во вкладах и ценных бумагах, покупка валюты и другие расходы | 6.9    | 4.3    | 14.3   | 17.7   | 17.5   | 17.5   |

Источник: [7].

обязательных платежей и добровольных взносов, и расходы на покупку товаров и оплату услуг – на 0,5 и 10,1% соответственно (табл. 5).

Таким образом, в сфере доходов и потребления в 1990–2003гг. проявилось обесценивание сельскохозяйственного труда и утрата заработной платой стимулирующей функции. При этом происходит процесс деформации структуры денежных доходов населения в пользу социальных трансфертов при снижении доли оплаты труда. Все это свидетельствует об ухудшении материального положения и снижения оплаты труда работников сельскохозяйственных организаций.

В аграрном секторе Беларуси приоритет отдан развитию крупнотоварного производства, наряду с которым функционируют личные подсобные и крестьянские (фермерские) хозяйства. Развитие фермерского движения в Беларуси началось после принятия Закона «О крестьянском (фермерском) хозяйстве» от 18 февраля 1991г. (табл.6). Однако, если в 1995г.

насчитывалось 2954 фермерских хозяйств, то в 2003г. их осталось 2399. Большое количество прекративших деятельность хозяйств не смогли адаптироваться к жестокой конкуренции в рыночных условиях. В тоже время возросла общая земельная площадь сельскохозяйственных угодий фермерских хозяйств, а также средний их размер – с 52,1 га в 1995г. до 54,2 га в 2003г. В настоящее время в Беларуси функционирует 2493 крестьянских (фермерских) и 1,2 млн. личных подсобных хозяйств, за которыми закреплено более 1,5 млн. га сельскохозяйственных угодий. Доля фермерских хозяйств в общем объеме производства сельскохозяйственной продукции небольшая и составляет 1,76% зерна, 0,96% картофеля, 4,10% овощей, 0,70% мяса, 0,60% молока.

Мировой опыт показывает, что достигнуть высокой эффективности на небольших площадях при мелкотоварном производстве крайне трудно. Поэтому фермерские хозяйства должны развиваться на основе крупных капитальных вложений, материально-

Таблица 6

**Динамика развития крестьянских (фермерских) хозяйств в  
Республике Беларусь**

| Показатели                                                | Годы |      |      |      |       |       |
|-----------------------------------------------------------|------|------|------|------|-------|-------|
|                                                           | 1995 | 1998 | 2000 | 2001 | 2002  | 2003  |
| Количество хозяйств                                       | 2954 | 2677 | 2651 | 2525 | 2397  | 2399  |
| Общая земельная площадь, тыс. га                          | 52.1 | 60.9 | 76.6 | 82.8 | 93.2  | 130.1 |
| Средний размер земельных угодий фермерского хозяйства, га | 17.6 | 22.7 | 28.9 | 32.8 | 38.9  | 54.2  |
| Посевные площади, тыс. га                                 | 42.3 | 42.8 | 54.5 | 58.1 | 83.5  | 97.4  |
| В том числе:                                              |      |      |      |      |       |       |
| Зерновые                                                  | 30.8 | 32.3 | 30.4 | 32.8 | 39.2  | 46.0  |
| Картофель                                                 | 3.6  | 3.1  | 4.9  | 5.3  | 4.8   | 5.7   |
| Овощи                                                     | 0.4  | 0.9  | 2.3  | 1.6  | 2.3   | 4.1   |
| Объемы производства, тыс. т:                              |      |      |      |      |       |       |
| Зерно                                                     | 56.4 | 49.1 | 47.4 | 56.1 | 79.0  | 95.7  |
| Картофель                                                 | 44.2 | 37.1 | 69.3 | 57.3 | 54.6  | 83.1  |
| Овощи                                                     | 6.3  | 11.7 | 32.0 | 28.8 | 28.7  | 72.0  |
| Мясо (реализация в живой массе)                           | 3.2  | 2.3  | 2.0  | 4.1  | 4.3   | 6.2   |
| Молоко                                                    | 8.0  | 7.3  | 6.0  | 17.0 | -14.9 | 28.3  |
| Удельный вес в общем объеме производства в республике, %: |      |      |      |      |       |       |
| Зерна                                                     | 0.80 | 1.01 | 0.98 | 1.09 | 1.32  | 1.76  |
| Картофеля                                                 | 0.51 | 0.49 | 0.79 | 0.74 | 0.74  | 0.96  |
| Овощей                                                    | 1.25 | 0.97 | 2.32 | 2.04 | 1.90  | 4.10  |
| Мяса (реализация в ж. в.)                                 | 0.18 | 0.31 | 0.32 | 0.46 | 0.48  | 0.70  |
| Молока                                                    | 0.11 | 0.14 | 0.13 | 0.35 | 0.30  | 0.60  |

Источник: Расчеты авторов по данным источника [4].

технического и научного обеспечения при всесторонней экономической поддержке. При этом агробизнес ведется эффективнее в истинно частном производстве, поэтому становление фермерского уклада должно стать особой заботой государства (Ходько И., 2004).

Сельские труженики сосредоточили свои усилия на личных подсобных хозяйствах (ЛПХ). Создаваемая в ЛПХ сельскохозяйственная продукция может самостоятельно реализовываться работником на рынке и становиться источником трудового дохода. Совет Министров Республики Беларусь в постановлении от 31 января 2000 г. №127 «О мерах по увеличению производства и заготовок сельскохозяйственной продукции в личных

подсобных хозяйствах граждан» отмечает, что за этими хозяйствами закреплено 14% сельскохозяйственных земель, в них получают около 80% овощей, картофеля, более 30% молока и около 20% мяса от общих объемов производства. За последние 10 лет число ЛПХ неуклонно сокращалось при росте площади среднего земельного участка с 0,3 га до 0,8 га (табл.7).

Валовые сборы зерновых и зернобобовых культур, картофеля и овощей в 2003г. увеличились в 1,5 раза и более по сравнению с уровнем 1990г. за счет роста посевных площадей в 1,3 и более раз. Рост среднего земельного участка связан с тем, что в настоящее время законодательство позволяет иметь в собственности до 1га и арендовать до

Таблица 7

**Динамика развития личных подсобных хозяйств**

| Показатели                         | 1990г. |                                                       | 2000г. |                                                       | 2001г. |                                                       | 2002г. |                                                        | 2003г. |                                                       |
|------------------------------------|--------|-------------------------------------------------------|--------|-------------------------------------------------------|--------|-------------------------------------------------------|--------|--------------------------------------------------------|--------|-------------------------------------------------------|
|                                    | ЛПХ    | В %<br>от<br>всего<br>с.-х.<br>произ-<br>водст-<br>ва | ЛПХ    | В %<br>от<br>всего<br>с.-х.<br>произ-<br>водств-<br>а | ЛПХ    | В %<br>от<br>всего<br>с.-х.<br>произ-<br>водст-<br>ва | ЛПХ    | В %<br>от<br>всего<br>с.-х.<br>произ-<br>зводст-<br>ва | ЛПХ    | В %<br>от<br>всего<br>с.-х.<br>произ-<br>водст-<br>ва |
| Число ЛПХ. тыс.                    | 1550   | х                                                     | 1265   | х                                                     | 1246   | х                                                     | 1239   | х                                                      | 1227   | х                                                     |
| Посевная<br>площадь. тыс. га       | 456    | 8                                                     | 1000   | 16                                                    | 1050   | 17                                                    | 944    | 17                                                     | 933    | 17                                                    |
| В т. ч. зерновые и<br>зернобобовые | 28     | 1                                                     | 211    | 8                                                     | 251    | 10                                                    | 208    | 9                                                      | 204    | 9                                                     |
| Картофель                          | 349    | 55                                                    | 564    | 85                                                    | 559    | 88                                                    | 478    | 87                                                     | 466    | 88                                                    |
| Овощи                              | 16     | 39                                                    | 78     | 80                                                    | 80     | 86                                                    | 72     | 83                                                     | 75     | 76                                                    |
| Урожайность. ц/га                  |        |                                                       |        |                                                       |        |                                                       |        |                                                        |        |                                                       |
| Зерновые и<br>зернобобовые         | 27.4   | 101                                                   | 18     | 95                                                    | 22     | 111                                                   | 20     | 79                                                     | 27.3   | 113                                                   |
| Картофель                          | 132    | 96                                                    | 132    | 99                                                    | 124    | 101                                                   | 110    | 80                                                     | 167.0  | 102                                                   |
| Овощи                              | 160    | 85                                                    | 131    | 98                                                    | 153    | 109                                                   | 123    | 78                                                     | 208.3  | 110                                                   |
| Валовой сбор. тыс. тонн            |        |                                                       |        |                                                       |        |                                                       |        |                                                        |        |                                                       |
| Зерновые и<br>зернобобовые         | 77     | 1                                                     | 389    | 8                                                     | 495    | 10                                                    | 566    | 9                                                      | 557    | 10                                                    |
| Картофель                          | 4625   | 54                                                    | 7467   | 86                                                    | 6976   | 90                                                    | 6778   | 91                                                     | 7780   | 90                                                    |
| Овощи                              | 246    | 33                                                    | 1085   | 79                                                    | 1225   | 87                                                    | 1308   | 87                                                     | 1562   | 78                                                    |
| Молока                             | 1806   | 24                                                    | 1814   | 40                                                    | 1876   | 39                                                    | 1742   | 36                                                     | 1615   | 35                                                    |
| Мяса в жив.весе<br>(реализация)    | 233    | 13                                                    | 220.7  | 26                                                    | 219    | 24                                                    | 211    | 24                                                     | 205    | 23                                                    |
| Яиц. млн. шт.                      | 1412   | 39                                                    | 1219   | 37                                                    | 1252   | 40                                                    | 1254   | 43                                                     | 1230   | 44                                                    |
| Уд. вес валовой<br>продукции. %    | 24.5   | х                                                     | 42.8   | х                                                     | 39.4   | х                                                     | 42.7   | х                                                      | 45.6   | х                                                     |

Источник: Расчеты авторов по данным источника [7].

3га. Удельный вес валовой продукции, производимой ЛПХ в 2003г., увеличился на 21,1 пункто-процентов по сравнению с 1990г.

### Conclusions, proposals, recommendations.

Для повышения уровня доходов сельских жителей необходимо сформировать систему самозанятости работников, т. е. развивать на селе несельскохозяйственные виды деятельности, включая переработку сельскохозяйственной продукции в мини-цехах, подсобные производства и народные промыслы, агротуризм (Докторов В., 2004; Замуруева Е., 2004). Нуждается в совершенствовании финансово-кредитная и налоговая политика для стимулирования предпринимательской деятельности на селе. Например, денежная выручка от реализации продукции переработки сельскохозяйственного сырья на сельскохозяйственных предприятиях не должна облагаться налогом на прибыль. Не разработана также специальная законодательная база по развитию агротуризма, где были бы предусмотрены льготы по налогообложению данного вида предпринимательской деятельности. Фермерам практически не доступны льготные кредиты и ряд государственных преференций, которые имеют государственные сельскохозяйственные предприятия.

Общая социально-экономическая обстановка в стране настоятельно требует развития не только крупнотоварного производства, но и ЛПХ, так как их не надо создавать заново, и главное, что ЛПХ чутко реагируют и быстро приспосабливаются к рыночной конъюнктуре и запросам потребителей. Личные подсобные хозяйства являются также дополнительным источником доходов для сельских жителей.

Для того чтобы приостановить негативные демографические тенденции на селе и стабилизировать ситуацию, необходимо также улучшить социально-бытовые и производственные условия для сельских работников. В Государственной программе возрождения и развития села на 2005-2010 годы предусмотрен комплекс своевременных и действенных мер по комплексному развитию сельских территорий, включающий:

повышение уровня заработной платы работников сельского хозяйства до среднереспубликанского; благоустройство сельских населенных пунктов, формирование на базе центральных усадеб агрогородков, развитие в них жилищного, коммунального, культурно-бытового строительства и обслуживания; обеспечение электроснабжения, транспортного сообщения, повышение уровня и качества водо- и газоснабжения сельских населенных пунктов; улучшение качества медицинского обслуживания и образования сельских жителей; повышение эффективности работы торговых, бытовых и культурно-досуговых организаций; осуществление технического и технологического переоснащения сельскохозяйственного производства; повышение уровня научного обеспечения АПК (Государственная программа возрождения и развития села, 2005). Мы считаем, что особо важно принять меры по закреплению молодежи и молодых специалистов на селе, создав для них надлежащие жилищно-бытовые и производственные условия. Необходимо также разработать четкую программу для организации труда и отдыха работников сельского хозяйства.

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### **The summary**

В статье проанализирована демографическая ситуация в Республике Беларусь. Представлены данные об основных социально-экономических показателях уровня жизни населения: денежных доходах и расходах, их составе, среднемесячной заработной плате работников сельского хозяйства. Показана динамика развития фермерских и личных подсобных хозяйств. Даны предложения по повышению уровня жизни на селе. В частности, для повышения уровня доходов сельских жителей необходимо сформировать систему самозанятости работников, т. е. развивать на селе несельскохозяйственные виды деятельности, включая переработку сельскохозяйственной продукции в мини-цехах, подсобные производства и народные промыслы, агротуризм. Нуждается в совершенствовании финансово-кредитная и налоговая политика для стимулирования предпринимательской деятельности на селе. Например, прибыль от реализации продукции переработки сельскохозяйственного сырья на сельскохозяйственных предприятиях не должна облагаться налогом. Не разработана также специальная законодательная база по развитию агротуризма, где были бы предусмотрены льготы по налогообложению данного вида предпринимательской деятельности. Фермерам практически не доступны льготные кредиты и ряд государственных преференций, которые имеют государственные сельскохозяйственные предприятия. Общая социально-экономическая обстановка в стране настоятельно требует развития не только крупнотоварного производства, но и личных подсобных хозяйств населения, так как их не надо создавать заново, и главное, что личные подсобные хозяйства чутко реагируют и быстро приспосабливаются к рыночной конъюнктуре и запросам потребителей. Они являются также дополнительным источником доходов для сельских жителей. Для того чтобы приостановить негативные демографические

тенденции на селе и стабилизировать ситуацию, необходимо также улучшить социально-бытовые и производственные условия для сельских работников. В Государственной программе возрождения и развития села на 2005-2010 годы предусмотрен комплекс своевременных и действенных мер по комплексному развитию сельских территорий, включающий: повышение уровня заработной платы работников сельского хозяйства до среднереспубликанского; благоустройство сельских населенных пунктов, формирование на базе центральных усадеб агрогородков, развитие в них жилищного, коммунального, культурно-бытового строительства и обслуживания; обеспечение электроснабжения, транспортного сообщения, повышение уровня и качества водо- и газоснабжения сельских населенных пунктов; улучшение качества медицинского обслуживания и образования сельских жителей; повышение эффективности работы торговых, бытовых и культурно-досуговых организаций; осуществление технического и технологического переоснащения сельскохозяйственного производства; повышение уровня научного обеспечения АПК. Мы считаем, что особо важно принять меры по закреплению молодежи и молодых специалистов на селе, создав для них надлежащие жилищно-бытовые и производственные условия. Необходимо также разработать четкую программу для организации труда и отдыха работников сельского хозяйства.

### ***The Problems and Ways of Raising Level Incomes of the Agriculture Workers of the Republic of Belarus***

#### ***The summary***

*In the article the authors analyse the demography situation in the Republic of Belarus. He represents data on the major socio-economic indicators of the living standards: money incomes and expenditures, their composition, average monthly and salaries of agricultural workers. Track record of the development farming and personal subsidiary facilities is shown. He gives*

*the offers that should be to heighten the living standard in the village. In particular, in order to raise the level of the villagers money incomes it is necessary to establish the system of workers self employment, i. e. to develop non-agricultural activities in the village including the processing of agricultural produce in small-size job shops, the local origind handicraft industries and agrotourism. Credit financing and tax policy for stimulation entrepreneurship in the village need perfecting. For example, the profits obtainid from the sale of the products of agricultural processing in agricultural enterprises shouldnt be taxed. Special legislation on the development of agrotourism where tax advantages of this kind of entrepreneurship would be provided hasn't been worked out. Preferential crediting and a number of other state preferences that are at the disposal of state agricultural enterprises are not available to the farmers. The general socio-economic situation in the country persistently requires the development of not only large-size commodity, output but private holdings as they neednt be established anew, and the main thing is that private holdings quickly react and adjust to the market conjuncture and consumer demands. They are also an additional source of income for villagers in order to stop negative demography ten-*

*dencies in the village and to stabilize the situation its abonecessary to improve social and working conditions for agricultural workers. The State Programme of the revival and development of the rural areas in 2005-2010 provides a complex of timely and effective measures to develop rural areas including: raising salaries of agricultural workers to the level of an average salary in the republic; the improvement of rural settlemens; the formation of agrosettlements on the basis of central farms; the development of house building and public and cultural services; the provision of energy supplies and transport services; the improvement of water and gas supplies in rural areas; the perfection of the quality of medical care and education of villagers; the improvement of service in trade, social, cultural and recreational organisations; the implementation of technical and technological reequiptment of agriculture; the rise of the level of the scientifie support of the agroindustrial complex. We consider it to be of the utmost importance to take measures to settle the youth and young specialists in the village after creating proper social, living and working conditions for them. It's also necessary to work ont an accurate programme for the organization of work and leisure for agricultural workers.*

## Revealed Comparative Advantage in Dairy Sector: Evidence for Lithuania vis-à-vis the European Union

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### Abstract

This paper explores the revealed comparative advantage and the pattern of trade flows/trade specialisation from Lithuania to the EU on dairy sector level. Most of these studies are based on partial measures competitiveness as comparative advantage on the bilateral level, however, trade between Lithuania and EU are taken into account only, i.e. bilateral comparative advantage of Lithuanian vis-à-vis EU in EU-15 market (as a geographical zone in 2004). Since we are interested in the competitiveness of Lithuania within European context, we analyze the pattern of trade flows and the empirical distribution of the Balassa's index and its stability and properties over time, using Lithuanian and European Union trade data.

**Key words:** competitiveness, foreign trade, bilateral trade, revealed comparative advantage.

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### Introduction

Restatement of Lithuania's independence, the variable patterns of geographic structure – reorientation from East to West – some advantage dairy products found competitive niche in EU and other international markets. On other hand, though in the early and middle 90s the share of dairy products was around 56 percent in the value of total agricultural exports to EU. However, at the end of last decade change of export flows was not in favour of dairy products in general. Indeed, if we compare the first year with the last year of 1996-2003, the indicators have fallen by more than third to 15.7 percent. Conversely, growth till 36 percent was observed in 2004. So *a priori* we can say that specialisation of Lithuania's dairy products was very changeable, so competitiveness in EU-15 markets as well. But the tendencies and variables of influencing factors are not very clear at the moment.

The final **purpose** of this paper is to define Lithuania's revealed comparative advantage (RCA) in dairy sector and to evaluate the foreign trade specialization patterns of the Lithuanian dairy sector vis-à-vis EU market in the latter half of the 1990s and early 2000s. The empirical analysis is based on Balassa's RCA index and the structure of foreign trade flows. Since we are interested in comparative advantage of Lithuanian

agriculture on the bilateral trade level vis-à-vis European Union context, we measure RCA variables and the pattern foreign trade flows with respect to EU-15 as the comparator.

The remainder of the paper is organized as follows: section 2 outlines the agricultural trade relations between Lithuania and the EU-15. Section 3 reviews the methodological and empirical literature on the measures of revealed comparative advantage. Section 4 reports empirical results. The last section summarizes the some conclusions to be drawn from the work.

### Lithuania and the EU Agricultural Trade Relationship

The three important dimensions of the trade relationship between the Lithuania and the European Union (EU) respectively in the three different periods are: (i) the first one started at the beginning of the 1990s with European Communities' recognition the independence of Lithuania and Agreement on Trade and Commercial and Economic Co-operation between EC and Republic of Lithuania; (ii) the second was the Free Trade Agreement between EU and Lithuania and Association Agreement was started in the middle of the last decade; and the last (iii) the third was Accession Treaty' 2003 which started when Lithuania became a full member of European Union on 1 May, 2004.

The relationship between Lithuania and EU started at the beginning of the 1990s, since Lithuania's independence and was much intensified over last decade. Official relationship and economic co-operation between the Lithuania and the European Community started on 1991 when, the first, on 27 August the European Community (EC) decided to recognise the independence of Lithuania and, the second, the following year, an Agreement on Trade and Commercial and Economic Co-operation was signed between EC and Republic of Lithuania. But not-official trade relationships started even earlier on. Besides, the re-orientation of Lithuanian international trade from Eastern to Western markets made enormous impact on the structure and volume of agricultural external trade. Lithuania made progress exporting agricultural and food products to markets in Western Europe, Central and Eastern Europe, and other developed countries. It was no doubt that, agreement of Trade and Commercial and Economic Co-operation between EC and Lithuania caused some changes in the bilateral trade. Expectedly, there was evident increase. During 1991–1994, Lithuania became a growing importer from EU. The Lithuania's import share from the EU in 1994 reached almost 26 percent. This is more than ten times high as in the 1991, when the import share from the EU was 2.5 percent. At the same time, Lithuania's export share to the EU was increased to. In the year 1994 the share of exports in to the

EU reached 25 percent whereas in 1991 it's was 2.3 percent.

In 1994, Free Trade Agreement between Lithuania and EU was signed, followed in 1995 by European Agreement (also known as Association Agreement), which completed and extended the scope of Free Trade Agreement. From 1 January, 1995 no quantitative restrictions applications existed to imports into EU of agricultural products originating in Lithuania, or to imports into Lithuania of agricultural products originating in EU. These agreements had main impact on changing bilateral trade between Lithuania and EU, especially in the amount of agricultural products. Lithuania's integration to EU and Free Trade Agreement with EU have resulted EU being not only one of the most important market for Lithuania (43 per-cent of Lithuania's exports in 2003, thus due to Russia crises - this share increased from 42 percent in 1998 to 53 per cent in 1999), but also one of the main sources for imported goods (43 per cent of Lithuania's exports in 2003, thus due to Russia crises this share increased to 47 percent in 1999). It should be added, that Free Trade Agreement between Lithuania and EU affected Lithuanian agricultural trade vis-à-vis EU in EU-15 market more positively than bilateral trade of others' goods.

Table 1 shows also the share of agricultural exports/import between Lithuania and EU in total Lithuanian agricultural exports/import to and from the world. Figures in last column suggest

Table 1

**Lithuania's Agricultural Trade (CN 01-24) from 1996 to 2004 (mio Lt)**

| Year | Export to the World | Change (%) | Export to the EU | Change (%) | EU share of Export | Import from the World | Change (%) | Import from the EU | Change (%) | Import share from the EU | Lithuania - the EU Trade Balance |
|------|---------------------|------------|------------------|------------|--------------------|-----------------------|------------|--------------------|------------|--------------------------|----------------------------------|
| 1996 | 1519,2              | -          | 294,9            | -          | 19,4               | 1635,3                | -          | 660,5              | -          | 40,4                     | -365,5                           |
| 1997 | 1952,7              | 28,5       | 421,2            | 42,8       | 21,6               | 2016,3                | 23,3       | 918,3              | 39,0       | 45,5                     | -497,1                           |
| 1998 | 1778,4              | -8,9       | 435,1            | 3,3        | 24,5               | 2287,3                | 13,4       | 1069,0             | 16,4       | 46,7                     | -633,9                           |
| 1999 | 1302,6              | -26,8      | 379,0            | -12,9      | 29,1               | 2024,6                | -11,5      | 904,0              | -15,4      | 44,7                     | -525,0                           |
| 2000 | 1592,8              | 22,3       | 572,5            | 51,1       | 35,9               | 2056,0                | 1,5        | 858,7              | -5,0       | 41,8                     | -286,1                           |
| 2001 | 2006,8              | 26,0       | 679,2            | 18,6       | 33,8               | 2231,6                | 8,5        | 951,6              | 10,8       | 42,6                     | -272,4                           |
| 2002 | 1935,0              | -3,6       | 710,9            | 4,7        | 36,7               | 2209,7                | -1,0       | 1031,0             | 8,3        | 46,7                     | -320,1                           |
| 2003 | 2355,2              | 21,7       | 808,0            | 13,7       | 34,3               | 2381,2                | 7,8        | 1042,4             | 1,1        | 43,8                     | -234,4                           |
| 2004 | 2443,6              | 3,8        | 1228,4           | 52,0       | 50,3               | 2655,9                | 11,5       | 1345,8             | 29,1       | 50,7                     | -117,4                           |

**Source:** Authors' calculation based on Trade Statistics from Statistics Lithuania database.

that EU has significant proportions in total Lithuania's agricultural imports for the period 1996–2004. Moreover, this proportion was rather stable (its variation has been 10.3 percent) and has been around 50 percent. Conversely, EU proportions in total Lithuania's agricultural exports have a conspicuous progress. From 1996 to 2003, the exports share to EU almost doubled - from 19.4 percent to 34.3 percent and other 16 percent jump from 2003 to 2004. This fact suggests the increase in specialisation of Lithuanian agricultural export to EU. In the middle of 1990, Lithuanian agricultural exports to EU are concentrated on dairy products. During 1995-1997 dairy sector account nearly 55 percent of agricultural exports to EU. But, it is worth to note that from 1997 to 2003, the share of dairy products exports to the EU decreased from 55 to 15.7 percent. This fact shows, that diversification of export has been achieved.

As to the principal group of dairy products, the cheese and dry milk together have significant proportions in total dairy's exports, nearly 93 percent in 1996, and 76 percent in 2004. Turning to 1990, the dry milk represented more than half of Lithuanian exports of dairy products, and accounted from 67 to 52 percent for 1997 - 2000. Whereas, at the beginning of the current decade, the export of cheese made up most proportions in total dairy products exports, nearly 55 percent in 2001-2004, with an increase in threefold during the period 1997-2002. The butter is the third largest export cluster of dairy products to EU-15, average 10 percent in 2001-2004. It shares in the value of dairy exports to EU increased from 5.6 percent in 1996 to 13.7 percent in 2003. Others dairy products have small share in total dairy products' export to EU.

Finally, it should be noted that our investigation of the changing pattern of Lithuanian agricultural exports to EU reinforces, on the one hand, the intuitive expectations, that agreements between Lithuania and European Community in first half of the 1990s caused greater increase in the bilateral trade, and, on the other hand, the finding of a general increase in differences of the comparative and competitive advantage of Lithuanian different agricultural products in EU-15 market. Therefore, in section 4, Balassa's RCA index is used to analyse Lithuania's comparative advantage of dairy products in EU-15 market. Prior to this analysis, a review of the methodological and empirical litera-

ture of Balassa's index, its applications and limitations is presented below in section 3.

### Measuring Revealed Comparative Advantages

The concept of Revealed Comparative Advantage (RCA) is grounded in conventional international trade theory that is widely used in practice (Hinloopen et al., 2000). First to utilize an index of revealed comparative advantage was Liesner (op.cit.) in the 7th decade, but the most frequently used measure in this respect after the refinement and popularization was produced by Bela Balassa. More than 30 years ago Bela Balassa published a paper, using for the first time, the measure of revealed comparative advantage (*RCA*) (Laursen, 1998). Since then this index has been applied in numerous reports and academic publications, as a measure index of international trade specialisation and international competitiveness.

The original equation of RCA Index, formulated by B.Balassa (1965) is:

$$(1) \quad B_{ij} = \frac{(X_{ij} / X_{rj})}{(X_{is} / X_{rs})}$$

where:  $X$  represents exports,  $i$  is a commodity,  $j$  is a country,  $r$  is a set of commodities and  $s$  is a set of countries  $B$  index is based on observed trade patterns, which measures a country's exports of a commodity relative to its total exports and to the corresponding export performance of a set of countries (e.g., the EU, OECD etc.). RCA can be computed at various levels of aggregation, i.e. a product, industry, or sector. If the value of the index exceeds unity, it is interpreted that the country has a revealed comparative advantage, i.e. a product/industry/sector in which the country is relatively more specialized in terms of exports. When the value of the index equals unity, the country has a neutral comparative advantage or its performance is the same as the average performance at the set of countries market level. If the value of the index is less than unity, the country is said to have a comparative disadvantage in the product/industry/sector.

Following Pitts et al. (1998) interpretation the RCA formula is expressed mathematically as:

$$(2) \quad RCA_{ij} = \frac{(X_{ij} / X_{is})}{(X_{rj} / X_{rs})}$$

The RCA of a country for a particular good is the share of the international market for that good divided by its share in the international market for all goods. This fraction is often multiplied by 100 for ease of presentation. Following original Balassa formula (1) RCA index can be computed then value of export of country in the numerator and value of exports of set of countries in the denominator are expressed in different currency. Following formula (2) RCA index can be computed then value of export of country in interest and values of exports of set of countries are expressed in the same currency.

Still, there is no single universally accepted clarification of Balassa's index quantitative means distribution according the separate intervals. Hinloopen et al., (2000) observes, that the despite detailed discussions on the Balassa's index, widespread among academic scholars and policymakers the distribution of the Balassa's index cannot be derived theoretically. In addition, the distribution has not been systematically analyzed empirically. Therefore, specific values of the Balassa's index are difficult to interpret. Moreover, it is *a priori* not clear, that a particular value for the Balassa's index implies the same extent of comparative advantage for different countries. A problem with this and similar indices is that observed trade patterns are likely to be distorted by government policies and interventions and may therefore misrepresent underlying comparative advantages. This is especially true of the agricultural sector.

Last-mentioned decade methodological literature and empirical research studies represent various purpose of Balassa's index as a RCA indicator. The main objectives and application areas of this index could be applied as:

1. The Revealed Comparative Advantage indicator is one commonly specified in applied analyses of international or intraregional trade relations (DeRosa, 1997; Hinloopen et al., 2000). It relates the importance of each country as a supplier of agricultural and other products to intraregional or world markets relative to set of competing exporting countries or all exporting countries.

2. Researchers such as Laursen (1998), Hinloopen et al., (2000), Lamy et al., (2003), Fontagné et al., (2000), DeRosa (1997) observe, that the Revealed Comparative Advantage (RCA) index is the most popular indicator of a country's trade specialisation. When *RCA index* equals unity for a given product/industry/sector in a given country, the percentage share of that sector is identical with the set countries or world average. Where *RCA* is above unity the country is said to be specialised in that product/industry/sector and vice versa where *RCA* is below unity.

3. In trade flows analysis, an indicator of comparative advantage aims at measuring specialisation is RCA. According to Fontagné et al., (2000) the specialisation of a country is an indication of how a given country allocates its resources to its various industries, under the assumption of balanced total trade.

4. In general, the RCA index has been applied in numerous reports (e.g. UNIDO, 2002; OECD, 2000) and academic publications (e.g. DeRosa, 1997, Havrila et al., 2001, Ferto et al., 2003a, b, Lamy et al., 2003, Fontagné et al., 2000) as a international competitiveness indicator. Lamy et al. (2003) argue, that a country shows a low level of competitiveness with product's /industry's /sector's RCA index is below unity, which indicates performance below the average level of world exports.

5. Lastly, the revealed comparative advantage index is used as one of the basic dimensions of trade multidimensionality indicators, e.g., *trade performance index* (TPI). TPI is developed by ITC (International Trade Centre UNCTAD/WTO) with the aim of assessing and monitoring the multi-faceted dimensions of export performance and competitiveness by sector and by a county.

Most researchers (e.g. Hinloopen et al., 2001, Ferto et al., 2003a,b), note the problems arise with Balassa's index use. A problem with the Balassa's index is that its value is asymmetric; it varies from one to infinity for products in which a country has a revealed comparative advantage, but only from zero to one for commodities with a comparative disadvantage. Many researchers have attempted to refine the concept of revealed comparative advantage (Hinloopen et al., 2000, Havrila et al., 2003, Fukasaku, 1992) et al.). Here we focus only on divide the Balassa's index into classes.

For elimination of problem of Balassa's index asymmetry in empiric measures, when B index

shifts from 1 to  $+\infty$ , the other method – matrix method was suggested by Hinloopen et al., (2001). They divide the Balassa's index into 4 classes which can be readily interpreted: class *a*:  $0 < \text{Balassa's Index} < 1$ ; class *b*:  $1 < \text{Balassa's Index} < 2$ ; class *c*:  $2 < \text{Balassa's Index} < 4$ ; class *d*:  $4 < \text{Balassa's Index}$ . Class *a* captures all those products / industries / sectors without a comparative advantage. The other three classes, *b*, *c*, and *d*, relate to products / industries / sectors with a comparative advantage, roughly divided into „weak comparative advantage“ (class *b*), „medium comparative advantage“ (class *c*), and „strong comparative advantage“ (class *d*). Separate researchers use the classes of Balassa's index for various purposes, ex. Hinloopen et al., (2000) produced the measures of comparisons between different development countries with different comparative advantage, particularly of it's differences of stability during long period in differences, is difficult. And vice versa, Ferto et al., (2003b) use this classification for every country separately under making the definition of a country's level to comparative advantage according the separate products/industries/sectors and to identify the persistence and mobility of revealed comparative advantage as measured by the Balassa's index over long period.

Admittedly, other appliance problem of Balassa's index is using international trade statistics for indicators calculation, necessarily revealed comparative advantage bias up to political or other factors. Otherwise, from Hecksher-Ohlin theory it is well known that a country's comparative advantage is basically determined by its factor endowment ratios and factor productivity, relative to the rest of the world (Havrila et al, 2003). Admittedly, that modern international trade theory without conventional basement resources determinants are based up to other factors of comparative and competitiveness advantages – economic parameters such as economy scale and scope. Therefore, Hillman, Marchese and Simone (op.cit.) observe that the advantage of using the revealed comparative advantage index is that it considers the intrinsic advantage of a particular export commodity and it's consistent with changes in an economy's relative factor endowment and productivity.

Otherwise, Ferto et al., (2003a, b), Fukasaku (1992), Havrila et al. (2003) and others focus the attention to comparative advantage measurement by post-trade statistics that actually insulated differences in data bias caused by government policy distortions in non-trade barriers and export subsidies. A major difficulty we face in applying the RCA index to actual trade data is that the change in the market share on which the RCA index is based reflects not only the change in the underlying comparative advantage of the exporting countries, but also the effects of demand sided in the importing countries. According to Fukasaku (1992), *a priori*, it is hardly possible to assume that the RCA index should indicate the *ex ante* comparative advantage of a country, which is determined by the pre-trade relative prices same as in an autarkic situation. Moreover, any summary index of trade performance, including the RCA index, is likely to be influenced by trade and other economic policies by governments at home and abroad. Most other researchers (DeRosa, 1997, Ferto et al., 2003a, Hinloopen et al., 2001), also observing RCA values, reflect not only fundamental factors such as natural resource endowments, but also trade distorting factors, such as foreign and domestic protection and also foreign and domestic subsidies to production and trade. This is especially true of the agricultural sector, where government interference is commonplace, a point noted by Balassa B. (1965). Indeed, the precise effect on trade indices of government intervention is unclear (Ferto and Hubbard, 2003a) and remains an area for further research. The inference of research of East and Central European countries' comparative advantage and competitiveness in Agro Food Sectors *vis-a-vis* the EU market lend support to Vollrath (1989) who noted that government intervention and competitiveness tend to be inversely related. A stylised feature in the literature of political economy of agricultural policy is that the level of protection and comparative advantage is negatively correlated. According to Ferto et al., (2003a), this suggests that those product groups revealing a comparative advantage could become even more competitive if markets could become more open. Like an evidence of such tendencies can be given research results present in article section 4. RCA index of dairy products doubled in 2004 then Lithuania became a part of Common Market. Naturally due to the short period of investigation categorical conclusions can't be made.

## Data and Empirical Findings: RCA in dairy products' trade between Lithuania and EU-15

Having presented the theoretical background in previous section, in this section an empirical examination of Lithuania's revealed comparative advantage in dairy sector is provided. As was noted on earlier - in section 3, the revealed comparative advantage (RCA) can be measured at the global level or restricted to the analysis of bilateral trade between just two countries or trading partners. Since, we are interested in the Lithuanian comparative advantage in EU context; however, calculations of the indicators are restricted to EU-15 market context (as set of countries -  $s$  in equation (1)), using total merchandise exports (as set of commodities -  $r$  in equation (1)). The RCA index is less satisfactory as cardinal measures, but is useful in identifying whether or not Lithuania has a specialization and comparative/competitive (dis)advantage in a particular product group.

The analysis is based on the annual time series

data on agricultural exports, extracted from Trade Statistics database compiled by EUROSTAT and Statistics of Lithuania. Annual Balassa's RCA indices are calculated as aggregated to 2-digit and 4-digit levels of Combined Nomenclature (CN) and for each subcategory dairy products group at CN 6-digit levels over the period 1996-2004. CN classification of dairy products of the 4-digit and the 6-digit levels of aggregation is provided below in Table 2. RCA indices are calculated for each subcategory (at CN 6-digit level) dairy products, that were exported, but reported for significant products (see Table 2). During the period, the type of stability of RCA values is analyzed in two ways. Formerly, was calculated the mean of standard deviation and the coefficient of variation to evaluate the statistical significance of RCA index changes. Secondly, RCA index was divided into four classes (four intervals) to identify the persistence and mobility of revealed comparative advantage as measured by Balassa's index, and to see the competitive position of a given sector

Table 2

**The Balassa RCA Index in Dairy Sector, Lithuania vis-à-vis the European Union in the EU-15 Market, 1996-2004**

| CN code | Products                                                                                 | 1996  | 1997  | 1998  | 1999  | 2000  | 2001  | 2002  | 2003  | 2004  | $\overline{RCA}$ | $\frac{st. deviation}{n}$ | $V_{RCA}$ |
|---------|------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|---------------------------|-----------|
| 01-24   | All agric-food products                                                                  | 0,49  | 0,63  | 0,63  | 0,56  | 0,84  | 1,02  | 0,99  | 1,19  | 1,31  | 0,85             | 0,29                      | 34,4      |
| 0401    | Dairy products                                                                           | 10,34 | 12,87 | 12,92 | 7,70  | 15,72 | 16,23 | 12,20 | 15,61 | 32,68 | 15,14            | 7,13                      | 47,1      |
| 0406    | Milk and cream, not concentrated                                                         | -     | 0,20  | 0,40  | 0,01  | 0,75  | -     | 1,85  | 24,15 | 103,7 | 21,85            | 41,20                     | 188,6     |
| 0402    | Milk and cream, concentrated                                                             | 652,4 | 288,7 | 95,76 | 48,82 | 245,0 | 94,40 | 51,04 | 1168  | 242,4 | 320,8            | 369,2                     | 115,1     |
| 0403    | Buttermilk, curdled milk, yogurt, kephir and other fermented or acidified milk and cream | 0,02  | 0,06  | 0,06  | -     | -     | 0,03  | 0,04  | 0,17  | 0,19  | 0,08             | 0,07                      | 84,9      |
| 0404    | Whey, concentrated or not                                                                | 1,94  | 10,24 | 3,73  | 27,26 | 23,89 | 0,44  | 0,22  | 13,16 | 5,01  | 9,54             | 10,09                     | 105,8     |
| 0405    | Butter and other fats and oils derived from milk                                         | 3,01  | 2,26  | 14,37 | 5,20  | 21,17 | 33,74 | 40,46 | 12,73 | 94,30 | 25,25            | 27,46                     | 108,8     |
| 0406    | Cheese and curd                                                                          | 31,97 | 29,05 | 34,10 | 18,60 | 48,27 | 52,82 | 42,89 | 30,48 | 44,02 | 36,91            | 10,84                     | 29,4      |

**Source:** Authors' calculation based on Trade Statistics from Eurostat and Lithuania Statistics database at the 2, 4 or 6 - digit level of the CN.

has improved or worsened. The calculations are presented in Table 2.

According to the indices at the 2-digit level of aggregation, in whole dairy products CN codes – 04 (excluding birds eggs; natural honey; edible products of animal origin, not elsewhere specified or included), Lithuania experienced a strong revealed comparative advantage in EU context over the period 1996-2003, albeit at varying degree. As expected, Lithuanian export to EU-15 market has raised in specialization not only with regard to total dairy products group, but also regarding the more important group of dairy products, such as fresh or other cheese types, butter, dry whole or skim milk, and other. As expected, the results of investigations RCA index of different dairy products at CN 4-digit level of aggregation reveal, that Lithuanian export to EU is specialised in dry milk, and is concentrated or contained milk and cream products; butter and other fats of milk; cheese and curd; and the whey products. The first three groups are shown as *d* class - strong Revealed Comparative Advantage during 1996-2003. Fourth group has strong RCA from first year of this period to 2000, and vice versa, in 2001-2002, its RCA filled to a class – disadvantage. A similar pattern of RCA index was also found in the group of fresh milk and cream products and group of buttermilk, curdled milk, yogurt, kefir and other products whit RCD (Revealed Comparative Disadvantage) indexes.

Table 3 provides the information on the distribution of the RCA index over all nine years of the period. The RCA index points  $B < y$  are reported, where  $y$  varies from 1 to .4. For example, the  $0 < B \leq 1$  point in 1996 is 25.0, indicating that 25 percent of the observations had a B index of below 1.

It is clear from Table 3 that there were no significant jumps through classes in 1996-2004. Summing-up might be said that about one quarter of observations had A class index and three quarters was in class D. Nevertheless, the evidence indicates that the global comparative advantage in Lithuanian dairy products has improved. The proportion of product groups with a D index ( $B < 4$ ) rose from 66,7 per cent to 71,4 per cent between 1996 and 2004. From Table 2 it can be seen, that among category at CN 4-digit level of aggregation Lithuanian export to EU is specialized mainly in milk, cheese and butter.

The investigation of RCA index stability shows, that despite fairly stable RCA index for whole dairy products, aggregate at CN 2-digit levels, over the eight years, specifically early 2000s, the variation of RCA indexes for each subcategory at CN 4-digit or 6-digit level dairy products was greater. However, it's coefficients of variation (which equals standard deviation divided by mean) given in Table 2, and implied, that changes of RCA indices are highest over the period 1996-2004.

## Conclusion

We have investigated the changing pattern of Lithuanian dairy products exports to EU in this paper. As a measure of trade specialisation we have employed the classic Balassa's Revealed Comparative Advantage Index and its statistical significant indices (mean, standard deviation and coefficient of variation). We feel, that despite their shortcomings, RCA indices provide a useful tool to detect changes of specialisation or revealed comparative (dis)advantage, and also offer additional informa-

Table 3

### Distribution of the RCA index in Dairy Products, Lithuania vis-à-vis the European Union in the EU-15 Market, 1996–2004 (per cent of RCA index)

| RCA classes                 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|-----------------------------|------|------|------|------|------|------|------|------|------|
| <i>a</i> : $0 < RCA \leq 1$ | 25,0 | 23,1 | 25,0 | 18,2 | 16,7 | 33,3 | 38,5 | 20,0 | 21,4 |
| <i>b</i> : $1 < RCA \leq 2$ | 8,3  | 7,7  | 0,0  | 0,0  | 0,0  | 8,3  | 7,7  | 13,3 | 7,1  |
| <i>c</i> : $2 < RCA \leq 4$ | 0,0  | 0,0  | 8,3  | 0,0  | 0,0  | 0,0  | 0,0  | 13,3 | 0,0  |
| <i>d</i> : $4 < RCA$        | 66,7 | 69,2 | 66,7 | 81,8 | 83,3 | 58,3 | 53,8 | 53,3 | 71,4 |

**Source:** Authors' calculation based on Trade Statistics from Eurostat and Lithuania Statistics database at the 6 - digit level of the CN .

tion on the competitiveness of Lithuanian dairy sector (or all agriculture) in relation with EU.

The distribution of RCA indices in 1996-2004 show that Lithuania has strong revealed comparative advantages in dairy sector and is experienced positive evolution in EU-15 market context. Despite fairly stable RCA index for whole dairy products over eight years, specifically early 2000s, the variation of RCA indexes for each subcategory dairy products (at CN 4-digit or 6-digit level) was greater. Another feature of these indices is that their pattern have polarisation over the period. Throughout the years 1996-2004, Lithuania has revealed comparative advantages for four from six at CN 4-digit levels product groups: concentrated or containing milk and cream; whey products; butter and other fats of milk; cheese and curd. However, the high coefficients of variation for each subcategory (at CN 6-digit level) dairy products reinforces the finding of greater variation of RCA indices over the eight years.

It is also important, that RCA values calculations are based on observed trade data. Therefore, it is hardly possible to assume, that RCA index is likely to be influenced by trade and other economic interventions policies in the markets such as tariffs, quotas or subsidies, which were pursued between Lithuania and EU in throughout when Lithuania integrated European Union in 2004. Whilst this is an issue, that has been extensively researched, the impact on identification of comparative advantage via RCA indices is not clear. Since the effect of intervention policy on RCA indices still not measured and explained in academic literature (also were not measured in this article), but doubling of RCA index from 2003 to 2004 shows that liberalisation of trade made great influence on trade patterns between Lithuania and EU.

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## Производительность труда в аграрном секторе Республики Беларусь

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### **Abstract**

Labour productivity is characterized by a parity of results and expenses of work and appears the major index of any socially useful activity. Within becoming market attitudes the labour productivity growth is a priority direction and it has a special meaning for efficiency increase of organizations, branches and economy as a whole managing. Productivity growth provides organizations and a social production with development and favourable prospects, finally conducts to population living level increasing. Research of labour productivity, ways and factors of its increasing, economic and social consequences of its growth is becoming actual process. Research results are applied into management practice, both at a micro level and at a national economy level.

**Ключевые слова:** труд, производительность, сельскохозяйственная продукция, эффективность, экономический рост, квалификация персонала.

### **Введение**

Производительность труда характеризуется соотношением результатов и затрат труда и является важнейшим показателем эффективности любой общественно-полезной деятельности. Рост производительности труда в период становления рыночных отношений является приоритетным направлением и имеет особое значение для повышения эффективности хозяйствования организаций, отраслей и экономики в целом.

Исследование вопросов производительности труда, путей и факторов, экономических и социальных последствий ее роста приобретают актуальный характер. Результаты этих исследований активно внедряются в практику управления, как на микроуровне, так и на уровне всей национальной экономики.

Объектами исследования являются хозяйствующие субъекты аграрной отрасли Республики Беларусь, государственные службы управления агропромышленного комплекса и занятости, организации, формирующие инфраструктуру аграрного рынка.

Целью исследования является: разработка предложений по повышению

производительности труда в сельском хозяйстве.

Методологической и информационной базой исследования являются труды отечественных и зарубежных ученых, материалы Министерства статистики, Министерства сельского хозяйства и продовольствия, Министерства труда и социальной защиты, сельскохозяйственных организаций.

Исследование строится на комплексном подходе, который предполагает при едином объекте исследования определенное разделение функций по его изучению. Основу инструментария для обработки собранных в ходе исследования данных составляет совокупность качественных методов (классификации, дифференциации и др.), а также некоторые количественные.

### **Результаты исследований**

В соответствии с Государственной программой возрождения и развития села на 2005-2010 годы «предстоит создать устойчивую аграрную экономику, гарантирующую продовольственную безопасность Беларуси, обеспечение более

высокого уровня жизни сельского населения, соответствующего новым требованиям к качеству рабочей силы и интенсивности труда» [2, с.14].

Являясь в целом основным объективным критерием стабильности экономики, высокая производительность способна обеспечивать наращивание объемов валового внутреннего продукта и достижение устойчивого экономического роста, ослабление инфляционных процессов, снижение удельных затрат и себестоимости продукции, конкурентоспособность товаров на внутреннем и внешнем рынках, повышение среднедушевого дохода населения. Рост производительности обеспечивает организациям и всему общественному производству развитие и благоприятные перспективы, что в конечном итоге ведет к повышению уровня жизни населения.

Исследование производительности труда, путей и факторов, экономических и социальных последствий ее роста весьма актуальны. Не случайно, в странах с развитыми рыночными отношениями этим проблемам уделяется серьезное внимание.

### **1. Сущность системы понятий, характеризующих эффективность трудовой деятельности и производительность труда**

В определении *производительности труда* исходной категорией является *труд*. В научной литературе не подвергается сомнению представление, согласно которому производительность труда относится только к конкретному труду и определяется как плодотворность труда, как способность создавать определенное количество потребительных стоимостей одним работником или в единицу времени. Всякий рост производительности труда, в конечном счете, означает экономию труда, сбережение рабочего времени.

Производительность – наиболее демонстративная характеристика, сравнительно показывающая, насколько эффективно работает организация: как она использует ресурсы, как правило, ограниченные; какова ее система управления; насколько целесообразна ее организационная структура; какова квалификация ее работников и их мотивация к труду; какие

(передовые или устаревшие) технологии и методы работы она использует; как организовано ее взаимодействие, в том числе информационное, в пространстве конкуренции.

Каждая организация отличается конкретным уровнем производительности труда. Изменение уровня производительности труда во времени показывает динамику производительности. При этом различают производительность труда в масштабе государства, отрасли, производительность труда в организации и производительность труда отдельного работника. В условиях формирования рыночных отношений следует различать отношение к процессам изменения производительности труда с общественной точки зрения, с точки зрения частного владельца – предприятия, фирмы, а также с точки зрения наемного работника.

Задачи повышения производительности труда являются актуальными для всех субъектов рыночного пространства, осознающих важность гибкости и инновационности как главной особенности рынка покупателя. В современном понимании производительности труда акцент делается на создание ценностей, а не на обычное сокращение издержек на рабочую силу, как при традиционных подходах. Кроме того, производительность труда – это не увеличение выпуска продукции в единицу времени. Точнее определять ее как экономию труда при заданных объемах выпуска продукции.

При этом содержательно рост производительности труда означает: увеличение массы продукции, создаваемой в единицу рабочего времени при недопущении снижения ее качества; повышение качества продукции при неизменной ее массе, создаваемой в единицу рабочего времени; сокращение затрат труда на единицу производимой продукции; уменьшение доли затрат труда в себестоимости продукции; сокращение времени производства и обращения товаров; увеличение массы и нормы прибыли.

Необходимость повышения уровня и качества жизни работников сельского хозяйства, требование роста конкурентоспособности (по количественным и качественным параметрам) отечественной

сельскохозяйственной продукции действительно требуют поиска новых подходов к повышению эффективности функционирования отрасли сельского хозяйства на основе совершенствования механизма управления и рационализации используемых ресурсов.

Следует отметить, что производительность является важнейшим показателем экономического роста, т.е. показателем, обеспечивающим рост реального продукта и дохода. *Экономический рост* – одна из основных целей в экономике государств с рыночной структурой хозяйствования. Увеличение общественного продукта на душу населения означает повышение уровня жизни. Рост реального продукта приводит к возрастанию материальных благ, предоставляемых государством своим работникам.

Повышение производительности остается основным источником реального экономического роста, прогресса, усиливающих позиций стран в условиях растущей конкуренции на мировых рынках, средством ослабления инфляционных процессов и повышения благосостояния.

## **2. Анализ уровня и динамики производительности труда в сельском хозяйстве**

С позиции измерения производительности важно подчеркнуть, что каждая организация использует ресурсы, несет затраты на них, производит и продает продукцию, получает прибыль. Разная прибыль связана с разной степенью производительности.

На основании проведенных исследований установлено, что уровень производительности труда в сельском хозяйстве в последние 10-14 лет характеризовался неустойчивой динамикой: ростом в отдельные годы и падением в последующий год после ее роста при устойчивом снижении среднесписочной численности работников. Очевидна тенденция к снижению производительности труда в период с 1990 по 1995 гг. и к росту в последующие годы. Данные проведенных расчетов свидетельствуют, что валовая продукция в расчете на одного работника в 2000 г. была близка к уровню 1990 г., однако в 2002 г. этот показатель был самым низким в

динамическом ряду за последние 14 лет.

За последние четырнадцать лет производительность труда в сельском хозяйстве, рассчитанная как отношение объема валовой продукции сельского хозяйства (в сопоставимых ценах) к среднесписочной численности работников снизилась в общественном секторе республики на 38%, при сокращении численности занятых в сельском хозяйстве за этот же период более, чем на 40%. Причиной стало существенное снижение объемов производства продукции сельского хозяйства. В свою очередь, снижению объемов производства наряду с экологическими причинами способствовал ряд производственно-технических и экономических факторов, анализ влияния которых имеет первостепенное значение для разработки направлений повышения производительности труда.

Исследованиями установлено, что период с 1990 по 2004 гг. характеризуется неустойчивой динамикой показателей урожайности и продуктивности животных и соответственно – динамикой затрат труда на единицу производимой продукции. При этом показатели трудоемкости, рассчитанные как затраты труда на единицу продукции по большинству видов продукции до 2000 г. имели тенденцию к росту, в последние четыре года снижаются, но уровень 1990 г. достигнут лишь по зерну, сахарной свекле и привесу свиней.

Анализируя причины, приведшие к росту затрат живого труда на единицу сельскохозяйственной продукции, следует отметить, что в первую очередь таковой явилось снижение уровня механизации производства вследствие значительной степени износа имеющейся техники и сократившихся финансовых возможностей для приобретения новой.

Еще более очевидно о динамике производительности труда заявляют показатели производства продукции на одного работника, в формировании которого нашли отражение изменения в объемах производства и численности работников. Анализ свидетельствует, что в натуральном выражении в сельском хозяйстве Республики Беларусь на одного среднегодового работника

приходится около 17 тонн зерна, что в 2,1 раза превышает уровень 1990 г., аналогичный показатель по сахарной свекле: ее производство на 1 работника выросло почти в 4,5 раза. По производству картофеля уровень данного показателя снизился в 2004 г. в 0,6 раза - причиной тому стало сокращение посевных площадей культуры, хотя динамика его весьма противоречива. Динамика производства продукции животноводства на 1 занятого в отрасли, позволяет сделать вывод, что 1996 год стал переломным в развитии отрасли. Постоянный рост показателя позволил достичь ему в 2004 г. уровня по мясу – близкого к уровню 1990 г. (2,0 и 1,6 т, соответственно), а по молоку – превысить его на 21%.

Показатели производства валовой продукции на 1 работника, затраты труда на единицу продукции, производство различных видов сельскохозяйственной продукции на одного работника общеприняты для характеристики производительности труда. Однако на формирование их уровня оказывает влияние комплекс факторов: уровень цен, материально-техническое обеспечение, селекционный потенциал и т.д.

Рассмотрим, что же влияет на уровень производительности живого труда в сельском хозяйстве. Для этого использовались показатели производственно-хозяйственной деятельности сельскохозяйственных организаций Гродненской области, характеризующиеся высокими показателями производительности труда. Анализ свидетельствует, что более чем 5-кратная разница в показателях производства валовой продукции на среднегодового работника в хозяйствах обусловлена адекватной разницей в показателях урожайности и продуктивности.

Исследуем, какие факторы лежат в основе такой дифференциации. Как показывает анализ, разница в обеспеченности энергетическими мощностями не столь значительна, не столь существенны природно-климатические условия хозяйств. Следовательно, можно предположить, что значительную роль в формировании различных уровней производительности труда играют организационные, социальные и прочие факторы. Более детальный анализ подтверждает данные предположения.

Так, хозяйства, характеризующиеся высоким уровнем производительности труда, осуществляли преобразование имущественных отношений, совершенствуют систему управления, лучше обеспечены кадрами и постоянно совершенствуют систему материального стимулирования работников. Данные свидетельствуют, что уровень заработной платы в эффективно работающих хозяйствах в 1,5-3 раза выше, чем в «отстающих», при этом обеспечивается рациональное использование средств на потребление. В «отстающих» же хозяйствах около 1/3 произведенного валового продукта используется на оплату труда, что еще в большей мере сокращает возможности обновления материально-технической базы.

Исследования показали, что в ходе становления рыночных отношений в экономике республики произошло снижение воспроизводственной и стимулирующей роли оплаты труда и его нормирования. Это в значительной мере обусловило снижение производительности труда, ослабление связи заработной платы с результатами работы, увеличение непроизводительных расходов и снижение эффективности производственной деятельности сельскохозяйственных организаций. Дешевый труд не может быть производительным, обеспечивать эффективное использование ресурсов.

### **3. Основные факторы и резервы роста производительности труда в сельском хозяйстве**

Анализ показывает, что на эффективность труда и хозяйственную деятельность, а также на качество и стабильность труда может быть распространена единая структура факторов, объединяемых в следующие группы: *научно-технологические, организационные, структурные и социальные*. Каждая группа факторов оказывает воздействие на использование ресурсов, которые в свою очередь, объединяются в следующие группы: *трудовые, природные, материальные, технические и финансовые*. Непосредственное воздействие факторов эффективности труда на использование ресурсов осуществляется в организации с учетом внешнего (институционального) воздействия на региональном, отраслевом и общегосударственном уровнях.

Основные факторы, обеспечивающие рост производительности труда в сельскохозяйственных организациях представлены в следующем виде (таблица).

Таким образом, производительность сельскохозяйственного труда является многофакторным, интегрированным показателем. Реальное воздействие на уровень и динамику данного показателя возможно только посредством управления взаимодействием и состоянием отдельных факторов, которые отличаются чрезвычайной динамичностью и в совокупности составляют определенную систему. Несмотря на традиционные подходы, когда производительность труда рассматривается как категория чисто экономическая, результативная, нельзя абстрагироваться от того бесспорного факта, что производительность есть результат организационной деятельности людей по регулированию сочетания отдельных факторов во времени и в пространстве. Именно в последнем состоит то главное, определяющее

движущие силы роста производительности труда.

Под резервами в данном контексте понимаются недоиспользованные возможности увеличения объема и повышения качества продукции (работ, услуг) за счет усиления творческого начала в труде работников и экономного расходования материально-технических ресурсов, устранения всякого рода производственных потерь. Естественно, что резервы возникают, могут быть выявлены и использованы непосредственно в организации. Это не исключает необходимости поиска путей реализации резервов организации за ее пределами (если это связано с поставщиками материальных ресурсов и потребителями продукции). В отличие от факторов эффективности, имеющих долговременный, перспективный характер, резервы носят текущий характер. Такое разграничение представляется весьма существенным в методологическом и практическом смысле, поскольку факторы связаны с выработкой стратегии, а резервы – с тактикой эффективизации.

Таблица 1

**Факторы роста производительности труда в  
сельскохозяйственных организациях**

|                               |                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Научно-технологические</b> | <ul style="list-style-type: none"> <li>• повышение уровня механизации за счет модернизации и замены устаревшего оборудования;</li> <li>• внедрение прогрессивных технологий, высокоурожайных сельскохозяйственных культур и пород животных;</li> <li>• разработка и применение современных коммуникативных технологий для обеспечения производства и сбыта сельскохозяйственной продукции.</li> </ul>       |
| <b>Организационные</b>        | <ul style="list-style-type: none"> <li>• приведение организационно-правовой структуры сельскохозяйственных предприятий в соответствие с требованиями законодательства и рыночных условий хозяйствования;</li> <li>• совершенствование структуры управления организацией;</li> <li>• совершенствование организации производства;</li> <li>• совершенствование организации и стимулирования труда.</li> </ul> |
| <b>Структурные</b>            | <ul style="list-style-type: none"> <li>• совершенствование производственной программы с учетом обеспеченности ресурсами и конъюнктуры рынка.</li> </ul>                                                                                                                                                                                                                                                     |
| <b>Социальные</b>             | <ul style="list-style-type: none"> <li>• повышение уровня квалификации кадров;</li> <li>• улучшение условий труда;</li> <li>• улучшение социальных условий на селе;</li> <li>• усиление материальной заинтересованности работников в результатах труда.</li> </ul>                                                                                                                                          |

#### **4. Предложения по повышению производительности труда в сельском хозяйстве**

В Государственной программе возрождения и развития села на 2005-2010 годы отмечено, что повышение эффективности АПК предусматривается за счет реализации комплекса организационно-экономических мероприятий, направленных на рациональное использование природных, финансовых, трудовых и материальных ресурсов.

Применительно к сельскому хозяйству темпы роста производительности труда заданы планируемыми темпами роста объемов производства. Анализируя данные параметры, отмечаем, что ежегодные темпы прироста объемов производства составляют по зерну – 5,1 %, сахарной свекле – 4,0, по молоку – 5,2, по привесу скота и птицы – 10,3 %. Эти задачи могут быть решены за счет существенного роста производительности труда.

Исходя из перспективных объемов производства продукции, нами обоснован совокупный уровень затрат труда на ее производство при ожидаемой (прогнозируемой) численности работников в отрасли. Расчеты показывают, что к 2010 г. по сравнению с 2004 г. трудоемкость производства должна снизиться по зерну на 37%, молоку – на 50, привесу крупного рогатого скота – на 63,5 и свиней – на 61%.

В целом стратегия повышения производительности труда должна заключаться в обеспечении конкурентоспособности сельскохозяйственной продукции и эффективности сельского хозяйства как отрасли, а каждой сельскохозяйственной организации - как хозяйствующего субъекта.

Для этого, прежде всего, необходимо:

- государственное инвестирование и субсидирование комплексных программ, направленных на повышение эффективности производства;
- предоставление ссуд под низкий процент;
- налоговые льготы и другие поощрительные меры.

Тактика должна обеспечивать реализацию стратегии путем разработки методических и нормативных материалов с учетом

отечественного и зарубежного опыта. В системе управления производительностью должны сочетаться два направления: мотивационное и техническое, то есть усиление заинтересованности в повышении производительности труда и обеспечение условий ее роста.

Наиболее действенной формой обеспечения целенаправленной работы по повышению производительности и эффективности труда является создание системы разработки и осуществления программ, предусматривающих комплексное решение этой проблемы с выходом на эффективность хозяйственной деятельности организации. Программы повышения эффективности труда на всех уровнях должны иметь самостоятельное значение, но могут включаться в соответствующие программы экономического и социального развития в качестве одного из основных разделов.

**На государственном уровне программа повышения эффективности труда должна охватывать следующие направления работы:**

- обеспечение социально-экономической ориентации научно-технической политики создания новых технологий и средств производства путем выработки и строгого соблюдения требований эффективного труда, привлекательного для человека по содержанию и условиям, что должно найти отражение в инвестиционной политике и стимулировании труда разработчиков;
- усиление роли организационных факторов в повышении эффективности труда на основе разработки нормативных актов, материалов и рекомендаций по комплексному решению вопросов организации трудовой деятельности;
- определение социально-экономических приоритетов по выработке структурной политики и размещении производительных сил во взаимосвязи с политикой занятости и с учетом наличия трудовых ресурсов; поддержки предпринимательства, развития кооперационных связей между отраслями и регионами, а также внешнеэкономических связей;

■ создание экономических и социальных условий для обеспечения действенности систем повышения квалификации всех категорий работающих, для усиления мотивов и стимулов высокопродуктивного труда, для улучшения социальных условий труда и повышения на этой основе эффективности труда.

**На региональном (отраслевом) уровне программа повышения эффективности труда должна включать следующие направления:**

■ обеспечение гибкой научно-технической политики с учетом отраслевых особенностей, выделение приоритетных для экономики региона направлений развития технологии и средств производства;

■ формирование структурной политики, преобразование организаций, содействие установлению и поддержанию кооперационных связей между организациями, финансовая политика стимулирования эффективной деятельности организаций;

■ усиление роли социальных факторов: повышение квалификации работающих; развитие творческой активности работающих по выявлению резервов; улучшение социальных условий труда и развитие социальной инфраструктуры.

**На уровне организации программа повышения эффективности труда должна разрабатываться с учетом направлений по факторам эффективности.**

Кроме того, в организации должны разрабатываться мероприятия по рациональному использованию всех видов ресурсов. Большое значение имеют систематическое проведение оперативного анализа, выявление и устранение узких мест и потерь в производстве, а также расчет производственных мощностей сельскохозяйственных организаций и подразделений как основы планирования и анализа. При определении вознаграждения работника по результатам деятельности организации должен учитываться его вклад в повышение производительности и эффективности труда.

## **Заключение**

Очевидно, что в интересах обеспечения продовольственной безопасности, конкурентоспособности отечественной продукции, повышения эффективности производства и доходов населения необходимы существенный и быстрый рост производительности труда в отрасли, рост эффективности всей экономики страны. В этих целях могут быть использованы два пути:

■ сокращение затрат труда на производство продукции сельского хозяйства, направление высвобождающейся его массы на развитие других сфер общества;

■ увеличение объема производства продукции сельского хозяйства на основе повышения продуктивности земли и животных.

Основной фактор снижения общих затрат труда на производство аграрной продукции в стране – рост производительности труда *в крупных и средних сельскохозяйственных организациях*. Им принадлежит 84% сельскохозяйственных угодий, 83% посевных площадей, 84% поголовья крупного рогатого скота, 62% поголовья свиней и 67% поголовья птицы. Рост предложения дешевой сельскохозяйственной продукции со стороны крупных и средних сельскохозяйственных организаций позволит уменьшить вторичную занятость в хозяйствах населения.

Повышение продуктивности при одновременном снижении затрат труда на гектар посевов, голову животных практически возможно лишь на основе всесторонней интенсификации производства, освоения современных технологий. Решение этой задачи – важная проблема комплексного характера, требующая значительных капитальных вложений, технического перевооружения сельского хозяйства, роста его интенсивности, подготовки и повышения квалификации персонала, формирования по существу новых трудовых коллективов, изменения организации труда и повышения его мотивации, совершенствования управления и всех механизмов хозяйствования, обеспечения приоритетности развития сельского хозяйства и его поддержки со стороны государства.

Для обеспечения высокой производительности труда нужны мощные и систематически действующие мотивы к труду, т.е. наличие экономического интереса, который означает прежде всего возможность получать материальное вознаграждение в соответствии с затратами физических и духовных сил, распоряжаться результатами труда и выступать собственником средств производства. И с другой стороны – рост производительности труда создаст реальные возможности и для повышения оплаты труда.

По результатам исследования разработаны предложения по повышению производительности труда в сельском хозяйстве Республики Беларусь. Комплекс мер по повышению производительности труда в сельском хозяйстве определен с учетом теоретического обоснования системы понятий, характеризующих эффективность трудовой деятельности, анализа основных факторов эффективности труда и выявления резервов роста производительности. Учитывая, что наиболее действенной формой обеспечения целенаправленной работы по повышению производительности и эффективности труда является комплексный подход, разработанные предложения включают систему мер на макро- и микроуровнях, с учетом стратегии и тактики развития отрасли в целом и отдельных организаций.

Предложения по повышению производительности труда могут стать

основанием для разработки программ по повышению эффективности сельскохозяйственного труда на уровне государства, области, района. Современный научный инструментарий, разработанный в ходе исследования, является основанием для проведения оперативного анализа, диагностики и планирования деятельности сельскохозяйственных организаций, что в конечном итоге будет способствовать росту эффективности их функционирования.

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## REGIONAL DEVELOPMENT

## Reduction of Regional Diversities still on the Agenda in Latvia

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## Abstract

In spite of the rapid increase of annual GDP, the flow of various EU investments into Latvia and other activities, regional diversities within one country are still maintained. The gap between the most advanced Riga region, and other regions have not decreased much. The economic data of Latgale region still are the lowest and the most controversial in comparison with other regions. The improvement of the conditions could be enforced by more equal distribution of EU funds and the opportunities for the population of Latgale region to acquire relevant knowledge and skills.

**Key words:** Level of approach, labour force, employment in agriculture, microcredit, mentoring.

## Introduction

There are obvious social and economic differences among regions of Latvia, but Latgale has been unchangeably characterized by the worst figures.

In this region in comparison with average data across the country, people are one and a half times more (150.7%) employed in agriculture, hunting, forestry and fishery. On the other hand, they are less employed in the service (95.8%) and industry (80.6%) (EUROSTAT REGIO data base (2005)).

The above mentioned has caused the following:

- a) the low GDP\_PPP/inhabitant in Latgale that having increased since 1998 prices by 141.0%, in 2002 accounts for only 48.8% of the average per capita in the country, and is the lowest among other regions (EUROSTAT REGIO data base (2005);

- b) high unemployment level that is 2.1 times higher than in Riga region, and is the highest in Latvia in the recent years (EUROSTAT REGIO data base (2005)).

Thus the weaknesses of Latgale are: the lowest GDP per capita and the highest unemployment

level in the country. Latgale is characterized by high number of people employed in agriculture with low productivity. Infrastructure is out-of-date. Bridges, roads and streets are in a bad condition. Telecommunication and logistic service is underdeveloped thus hindering the development of this region.

Researchers have focused on the Latgale region problems. Among them A. Bērziņš and E. Vītoliņš (Territorial Differentiation...), I. Ciemiņa and O. Krastiņš (Latvijas pagastu...), E. Dubra (Latvijas ekonomikas...), L. Gorbacēviča (Darba laika...), Z. Goša (Tendencies of Education...), S. Keišs un E. Tilta (Rģionālās attģstģbas...), K. Leģinskis (Labour Forces...), E. Vanags, O. Krastiņš I. Vilka, V. Locāne, P.Šķiņķis and A. Brauere (Dažāda Latvija ) have recently touched upon different aspects of Latgale region.

The present article is devoted to the analysis of the possible development opportunities of the region, taking into account the noticeable share of agricultural production in this region.

**Goal of the research:** since in any aspect of analysis (economic, demographic, social etc) the

name of Latgale is mentioned, this article will formulate the characteristic features of Latgale that according to the authors' opinion create additional problems if compared to other regions. To achieve the goal the following objectives were set:

1. *to reflect the agriculture conditions of Latgale as still important economic activity on this territory and problems caused by it.*

2. *to identify tasks to promote the involvement of Latgale population in economic activities, specifically focusing on microcredit and mentoring.*

**Methods of research:** The research has been carried out, firstly, with in-depth analysis of statistic data in regional dimension, secondly, having interviews with a) 11 respondents with various status of employment in agriculture on issues of different business development models (representatives of different size farms and three representative of agriculture institutions); b) 14 members of Latgale microcredit groups about the problems of setting up businesses; c) 134 women entrepreneurs and rural women interested in starting their own business 21% of which is from Latgale. The interview protocols let the researchers fix the opinion of Latgale inhabitants towards Latgale region future.

## Results and discussions

### 1. Condition of Agriculture in Latgale

Since the share of agriculture, hunting, forestry and fishery in Latgale is much higher than in other regions, the focus further will be on the detailed analysis of this sphere of industry (see Table 1 and 2).

**Firstly**, the amount of utilized agricultural area in Latvia is 2,411,000 ha; it occupies 59.54% of the total land area in the country. The amount of utilized agricultural area in Latgale region is 64.5% of the total regional territory. Since the amount of UAA in Latgale farms is higher than average in Latvia but the amount of sown area is less than in Latvia in average (35.3% and 28.0%, respectively). It is influenced by lower crop yield in comparison with other regions (cereals, 100 kg ha – 54.6%, potatoes – 78.5%, vegetables – 78.6%).

**Secondly**, even though the size of farms in hectares in Latgale differs insignificantly from Latvia's average, legal types of business are different. In Latgale twice as less number of farms are registered as peasants' farms, but almost half of all farms (42.3%) in the country account for total number of farms registered as household plots.

Table 1

Land Use in Latgale and Latvia in 2003

|                                                | Latvia    | Latgale | Latgale/Latvia, % |
|------------------------------------------------|-----------|---------|-------------------|
| Utilized Agricultural Area (UAA), thousands ha | 2.411     | 650.8   |                   |
| % of total area                                | 59.5      | 61.5    | 103.3             |
| Sown area, thousands ha                        | 851.0     | 182.1   |                   |
| % of total area                                | 35.3      | 28.0    | 79.3              |
| Cereals, % of sown area                        | 50.4      | 40.3    |                   |
| Wheat, % of sown area                          | 15.0      | 12.1    |                   |
| Oilseeds, % of sown areas                      | 3.0       | 1.4     |                   |
| Sugar beet, % of sown area                     | 1.7       | -       |                   |
| Fodder crops, % of sown areas                  | 36.6      | 45.0    |                   |
| Vegetables, % of sown areas                    | 1.7       | 1.8     |                   |
| Cattle, thousands                              | 388,123   | 97,874  |                   |
| Of which dairy cows, thousands                 | 204,598   | 55,229  |                   |
| Pigs, thousands                                | 453,181   | 95,568  |                   |
| Sheep, thousands                               | 31,486    | 12,500  |                   |
| Poultry, thousands                             | 3,882,000 | 446,900 |                   |

**Source:** Latvia's regions in figures, Collection of statistical data. R., 2004. **Avots:** Latvijas reģioni skaitītos. Statistisko datu krājums. R., 2004.

Table 2

**Farm Structure in Latgale and Latvia in 2003**

|                                                   | Latvia                                 |              | Latgale                              |            |
|---------------------------------------------------|----------------------------------------|--------------|--------------------------------------|------------|
| Average farm size in ha                           |                                        |              |                                      |            |
| Farms                                             | Holdings                               | UAA          | Holdings                             | UAA        |
| <2 ha                                             | 24.5 %                                 | 1.8 %        | 9.9%                                 | 1.4%       |
| 2- <5 ha                                          | 26.1 %                                 | 7.4 %        | 31.9%                                | 11.9%      |
| 5 – <10 ha                                        | 23.3 %                                 | 14.0 %       | 32.0%                                | 24.7%      |
| 10 –<20 ha                                        | 15.8 %                                 | 18.5 %       | 19.2%                                | 27.8%      |
| 20 – <30 ha                                       | 4.4 %                                  | 9.0 %        | 4.3%                                 | 10.7%      |
| 30 - <50 ha                                       | 2.9 %                                  | 9.4 %        | 2.1%                                 | 8.3%       |
| 50 -<100ha                                        | 1.8 %                                  | 10.2 %       | 0.8%                                 | 5.7%       |
| >100 ha                                           | 1.2 %                                  | 29.7 %       | 0.4%                                 | 9.5%       |
| Total                                             | 126,610                                | 1,489,350 ha | 41,848                               | 446,504 ha |
| Legal type of business: a peasant farm (% no UAA) | 30.14% of total farms<br>50.10% of UAA |              | 14.5% of total farms 52.6%<br>of UAA |            |
| Household plots                                   | 96,525                                 |              | 40839                                |            |
| Individual farms/operating farms                  | 37,618                                 |              | 5,957                                |            |
| Cooperatives /commercial companies (total)        | 477                                    |              | 69                                   |            |
| Share of rented land in total UAA (%)             | 45.4                                   |              | 29.4                                 |            |
| Average rental prices (arable area, in Euro/ha)   | 71.42                                  |              | 45.7                                 |            |

Source: EUROSTAT REGIO database (2005).

Table 3

**Dynamics of Employment in 2001-2004 in Latvija**

|                                                             | Thous. people |        |        |
|-------------------------------------------------------------|---------------|--------|--------|
|                                                             | 2001          | 2002   | 2003   |
| Economically active population at the age of 15-74          | 1104.7        | 1123.5 | 1126.0 |
| Employed                                                    | 960.0         | 989.0  | 1006.9 |
| Employed in agriculture and hunting (main source of income) | 118.2         | 112.3  | 104.4  |

Source: CSB, 2003.

Table 4

**Persons regularly employed in agriculture in Latvia and Latgale in 2003**

|                                                                   | Latvia | Latgale |
|-------------------------------------------------------------------|--------|---------|
| Persons that has been employed in agriculture in recent months, % |        |         |
| Full time                                                         | 19.3   | 17.7    |
| Part-time, in hours                                               |        |         |
| <460                                                              | 28.9   | 25.7    |
| 460-919                                                           | 20.9   | 20.9    |
| 920-1,379                                                         | 15.3   | 17.9    |
| 1,380-1,839                                                       | 15.6   | 17.7    |

Calculated from: CSB, Riga. 2004.

Household plots mostly carry out natural or semi-natural farming.

**Employment in agriculture.** Official employment data show that in 2003 total number of employed people was 1006.9. For 104.4 thousand people (7.4% of all inhabitants at the age 15 – 74 or 10.4% of all employed) agriculture was main source of income. 9.2 thousand people (8.8% of employed in agriculture and forestry) produced only for family consumption.

The number of people employed in agriculture in Latvia as it is shown in Table 4 has been decreasing gradually and in all regions.

In terms of the work-load, on the whole the situation for those employed in agriculture in the country is estimated as negative. In Latgale the situation is even worse because only 17.7% of all employed in farms work full-time. Since in Latgale 1.5 times more people than average in Latvia are employed in farms, it is obvious that employment problems are more controversial than in other state regions. Ludza region has the most dramatic situation because in 2003 only 6.9% of all working-age people were employed full-time.

It can be concluded that, on the one hand, agriculture as the sphere of industry both economically and regarding employment still plays a crucial role in the functioning of region. The share of agriculture, hunting, forestry and fishery in Latgale region's GDP is twice as big as average in the country. On the other hand, the use of the labour force of these people and added value obtained from the economic activities is lower. Consequently, one of Latgale's ultimate goals is to catch up with Latvia's average results.

## 2. The farm development opportunities in Latgale

The endogenous model of rural development suggests the participation of rural communities in the formation of territorial development. For this purpose the authors carried out interviews primarily with owners/managers of 11 different size and specialization farms to obtain their opinion about the future opportunities of farms and the people working and living in them. The interviews with the same questions were held with 4 representatives of various agriculture production organizations and advisory centres on the behalf of stakeholders.

The respondents of both groups had the view that Latgale is rich in abandoned land therefore it is possible that agriculture production could increase due to more extensive use of machinery and high-quality seed material. Interviewees representing all farm sizes (16.7 – 750 ha) planned to expand agricultural production, receiving incomes from diversification of farming and improvement of agro-environment. Both groups claimed that the role of agriculture advisory centres network in the improvement of people's knowledge capacity will rise. The opinions were controversial only in the question regarding the number of employed in the agriculture. Farm owners considered that the present number of full-time employment will remain the same. The representatives of cooperatives and institutions considered that full-time employees will decrease and the number of part-time farming will rise, and that additional vacancies will be necessary outside farm and along with that the acquisition of new knowledge.

The present study focused on two opinions: farming diversification can have future in any size farm, specifically in small-sized farms. In such

Table 5

### Number of economically active enterprises and business organizations per 1,000 inhabitants 1999-2003

| Region                   | 1999        | 2000        | 2001        | 2002        | 2003        |
|--------------------------|-------------|-------------|-------------|-------------|-------------|
| Riga region              | 21.5        | 24.8        | 24.5        | 26.0        | 28.0        |
| Vidzeme region           | 11.8        | 12.4        | 12.0        | 12.2        | 13.0        |
| Kurzeme region           | 12.7        | 13.6        | 13.0        | 13.5        | 14.0        |
| Zemgale region           | 10.0        | 10.6        | 10.2        | 10.5        | 11.0        |
| Latgale region           | 9.0         | 9.7         | 9.2         | 9.6         | 10.0        |
| <b>Average in Latvia</b> | <b>15.8</b> | <b>17.8</b> | <b>17.3</b> | <b>18.2</b> | <b>19.5</b> |

Source: *Regional Development in Latvia. State Regional Development Agency, 2004. p. 32.*

farms as it is shown in Table 4 all family members will not have full-time jobs. It proves the necessity of new job places outside farms in Latgale region. However, presently in Latgale entrepreneurship is less developed than in other regions to offer such extra vacancies.

Simultaneously with on-going discussion about the EU funding and its target application: to invest in people or in infrastructure, two important movements are gathering strength in rural areas of Latvia promoting the start and expansion of economic activities. These two are microcredit and mentoring.

### 3. Microcredit

Microcredit movement that in Latvia was introduced in 1999 has paved the way for the entrepreneurship and has become very popular, especially among rural women.

The spheres of entrepreneurship in microcredit groups are very different:

- In production: fruit growing, flower and vegetable growing, greenhouse arrangement, strawberry and oyster mushroom growing, orchards, florist's, rabbit keeping, bee keeping, chicken farming, sheep farming.

- In service: dress making, make-up designing, hair-styling, accounting, legal and computer service, rural tourism (recreation, guest houses etc.), cafes, shops, entertainment organization, house cleaning, veterinary service etc.)

The amount of microcredit is not big – 500 lats, but more important is the knowledge that is obtained in the training process: communication and psychology, development of business plans and mutual support of group members. In 2005 Mortgage bank started a brand new pilot-project: a loan for women to promote entrepreneurship till 10,000 lats that is based on microcredit principles. To take a loan it is necessary two guarantors from

the group. It is important that a loan can be given if the legal owner of the farm is not the member of the group, but her husband. In that case a guarantor is the legal owner of the farm.

In spring and summer of 2005 six Latgale microcredit groups were monitored and the questionnaire was carried out among 14 members. The questions that were asked could be divided into four main groups:

1. the characteristics of entrepreneurship,
2. motivation for entrepreneurship,
3. abilities, skills and knowledge: obtained and necessary,
4. resources: obtained and necessary.

The analysis of the answers are presented in the above mentioned groups:

1. The types of entrepreneurship in Latgale microcredit groups are the following: retailing, chicken farming, traditional agriculture, bakery, establishing a café, green-house arrangement and vegetable growing, bee keeping, bee products, arrangement of recreation places, setting up of training centre.

2. Motivation for starting a business is 1) the wish to earn money for the family or to become independent – 54%, 2) to implement the hobby – 46%. One answer was: "I started my business because it was fashionable in the middle of the 90ties (!)" In all cases women managed to realize microcredit plans and they would like to have bigger funding for the expansion of their business.

3. Analysing abilities, skills and knowledge, it is possible to conclude that they obtained: the development and implementation of a business plan, work organization, communication skills with microcredit group members and clients. However, women most often lack skills to arrange accounting documents, advertise products or service. Some answers claimed that communication skills and knowledge in psychology is never too much.

Table 6

#### Microcredit statistics in Latvia's regions (as of December 1, 2005)

| Region       | Number of microcredit groups | Time and place of the first group |
|--------------|------------------------------|-----------------------------------|
| Zemgale      | 14                           | 1999, Bauska district, Islice     |
| Vidzeme      | 12                           | 2000, Valka district, Karki       |
| Latgale      | 6                            | 2003, Daugavpils district, Demene |
| Kurzeme      | 3                            | 2004, Liepaja district Vergale    |
| <b>TOTAL</b> | <b>35</b>                    | <b>x</b>                          |

4. Answers regarding the existing and necessary resources could be divided depending on the type of entrepreneurship, but mainly it was stated that there is the shortage of premises, transport and financing, knowledge, skills and experience and contacts as well. Positive evaluation was given to the support of group members and project management.

In microcredit seminars in Latgale that have been organized since 2000, the participants analyse the obstacles that hamper the start of entrepreneurship using the pair-comparative method, i.e., the problems were listed in the order of significance. The following problems were mentioned: the lack of determination, the lack of money, obscurity of an idea, the lack of family support, insufficient education, etc. In Latgale region in the first place that hampers the entrepreneurship the women mentioned knowledge and determination and only then came the lack of money. So money is not always the main thing! The features of character and psychological background also are important. If one has knowledge, determination and energy, it is possible to "find the money".

### **Mentoring**

Mentoring is the second movement in Latvia that could be defined as the process when an experienced entrepreneur shares skills and knowledge with a beginning businessperson thus encouraging the increase of entrepreneurs and their growth. During the time period of half a year 10 mentoring pairs and 2 groups have been set up in Zemgale, 5 pairs and 1 group in Vidzeme and 3 pairs in Latgale and Kurzeme each.

The first mentor in Latgale region was Vija Ancane, Aglona Bread, Ltd owner in Aglona county, Preiļi district. She started her business in January, 2000 after the Preiļi Bakery owned by cooperative organization "Turība" where she worked with her husband was closed down. The family with two small children was left without any earnings, so she was forced to start her own business. Thus a bakery was set up with her own bread and biscuit recipes. Now the bakery has moved into new premises where the energetic woman has established the bread museum as well. It is a popular place of attraction. The bakery employs 12 people staff, it owns 3 shops. Vija Ancāne has received the "The Land of Lakes" award for the participation in Culture Heritage Project. Since 2000 V. Ancane is also

a mentor who shares her professional skills and knowledge among trainees. Her educational background is public catering engineer. She has trained 7 mentees. According to Vija Ancane, the feeling that one receives while giving is the sweetest. Though none of her mentees has started a business, they are professionally ready to do it any time. The interviews with mentors and beginning entrepreneurs proved the following:

1. The majority of respondents mentioned the lack of relevant experience and initiative as well as knowledge and experience is the most serious obstacle. Mentorship is a successful two-sided learning/teaching process during which both a mentor and a mentee acquire new knowledge, develop professional skills, acquire wide range of new contacts and co-operation opportunities.

2. Women lack advisory service to enrich knowledge, they need meeting places for discussions, exchange of ideas and the establishment of co-operation networks.

Thus people involved in entrepreneurship and those interested in entrepreneurship consider that knowledge plays a crucial role in starting or expanding economic activities.

### **Conclusions**

1. There are substantial differences between economic achievements of Latgale region and average data across Latvia. Especially the differences are obvious between Latgale region and Riga region. Consequently, the reduction of regional differences remains an important task as one of the objectives of the EU development policy.

2. European structural funds for the next 7 years that are targeted to reduce the regional differences should be invested in the development of human resources as much as possible. However, the question still remains how these funds will be distributed among the regions in the future. It is important that the present practice of distributing funds, i.e., when Latgale, a region with the most complicated socio-economic conditions, receive the smallest part, but Riga region receive as much as Latgale, Zemgale and Vidzeme taken together, is suspended. The share of Latgale should be increased significantly, and the interviews showed that people of Latgale region are aware of the importance of knowledge, they are ready to acquire the necessary knowledge and apply it for the development of the region.

3. The microcredit and mentoring movement should be widely used since they proved to be relevant form of economic activity for Latgale conditions which do not require large investments but extensive training network.

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## **Inovācijas meža nozarē Zemgales plānošanas reģionā** ***Innovations in the Sector of Forestry of Zemgale Planning Region***

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### ***Abstract***

The goal of the paper is to investigate innovations in the forest industry and to determine the key directions for innovative activity in Zemgale planning region. The paper justifies the role of innovation in ensuring economic growth and gives general characterization of the forest industry in Zemgale planning region. On the basis of analysis of entrepreneurship, the introduction of innovations in the forest industry was critically assessed, and the characterization of the state of education and science was carried out, using the available statistical data. The reticulate method was applied in assessing the competitiveness of the forest industry. The paper underpins suggestions that the development of the forest industry must be carried out by applying integral approach which jointly comprises the inter-industrial coordinating system or the forest cluster.

**Key words:** innovations, the forest industry, Zemgale region

### **Ievads**

#### ***Introduction***

Jaunais Nacionālais attīstības plāns par Latvijas izaugsmes galvenajiem faktoriem turpmākajos septiņos gados – līdz 2013. gadam – paredz izvirzīt izglītību, zinātni un tehnoloģijas. Eksperti uzskata, ka pirmo reizi konkurētspējīgas tautsaimniecības attīstības priekšplānā izvirzītas tehnoloģijas, uz zinātni un pētniecību balstīta uzņēmējdarbība un ka šajā dokumentā pirmajā vietā ir cilvēks, nevis kā patērētājs, bet kā darbīga intelektuāla personība, kas gatava sasniegt tos mērķus, kas nodrošina labklājību (Grīnuma I., 2006).

Attīstīto valstu pieredze liecina, ka inovatīvās darbības rezultāts ir jauni, pasaules tirgū konkurētspējīgi produkti un pakalpojumi ar augstu pievienoto vērtību, kas nodrošina nozīmīgu iekšzemes kopprodukta pieauguma tempu, vairāk darba vietu kvalificētiem speciālistiem, kas savukārt veicina ekonomisko izaugsmi, sabiedrības labklājību un valsts uzplaukumu kopumā. Arī 2003. gadā Latvijā veiktie inovāciju ietekmes apsekojuma rezultāti apliecina, ka apmēram 1/5 daļai no inovāciju jomā aktīvajiem uzņēmumiem ir uzlabojusies preču vai

pakalpojumu kvalitāte, ir paplašinājies to skaits, 18,5% no inovatīvajiem uzņēmumiem ir izpildītas noteikumu vai standartu prasības, bet 17,2% – apgūts jauns tirgus vai palielināta pašreizējā tirgus daļa (Pētn. un jauninājumu ..., 2005).

Inovāciju vai meža nozares attīstības problemātika teorētiski un praktiski pamatoti ir analizēta vairāku zinātnieku (Kaktiņš J., 2003; Viekals U., 2004; Dimza V., 2003; Karnīte R., 2001; Saliņš Z., 2002; Jankava A., 2003; Silamiķe I., 2001; Treimanis A., 2004) u.c. darbos. Taču ir nepieciešams kritiski un detalizēti izvērtēt inovāciju attīstības perspektīvas minētajā nozarē Nacionālās attīstības plānā ietvertu prioritāšu kontekstā un reģionālās nevienlīdzības samazināšanas aspektā.

**Hipotēze:** inovāciju veicināšana ir nozīmīgs meža nozares attīstības faktors Zemgales plānošanas reģionā.

**Mērķis:** izpētīt inovācijas meža nozarē un noteikt inovatīvās darbības pamatvirzienus Zemgales plānošanas reģionā.

Rakstā izvirzīti šādi **pētnieciskie uzdevumi:**

- 1) sniegt vispārēju meža nozares raksturojumu Zemgales plānošanas reģionā;
- 2) uz uzņēmējdarbības analīzes pamata kritiski izvērtēt inovāciju ieviešanas gaitu meža nozarē;

3) analizēt izglītības un zinātnes situāciju un iespējas reģionā;

4) noteikt pamatvirzienus inovatīvās darbības veicināšanai meža nozarē.

**Pētniecības metodes.** Pētījumam pielietotas šādas metodes – induktīvā pētījumu metode, kas ļauj veikt savāktās, apstrādātās un izanalizētās informācijas vispārināšanu; deduktīvā metode, ar kuras palīdzību tiek pārbaudīta izvirzītā hipotēze; analīzes un sintēzes mijiedarbība atsevišķu datu izvērtēšanai, apkopošanai un interpretēšanai; loģiski konstruktīvā metode; monogrāfiskā; statistiskā un grafiskās metodes. Meža nozares konkurētspējas izvērtējumam lietota mārketinga pētījumu metode.

**Pētījumiem izmantotie materiāli:** darba mērķa sasniegšanai, uzdevumu risināšanai un hipotēzes pierādīšanai tiek izmantotas zinātniskās publikācijas, Zemgales attīstības aģentūras, Valsts zemes dienesta, Centrālās statistikas pārvaldes, Zemkopības ministrijas u.c. dati.

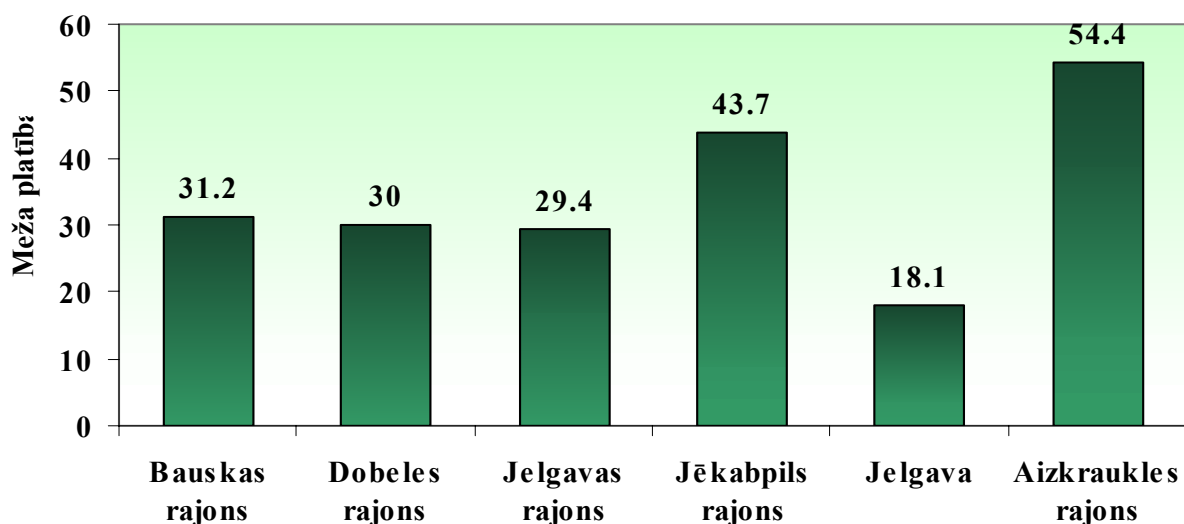
## 1. Meža nozares vispārīgs raksturojums Zemgales plānošanas reģionā

### 1. General characterization of Zemgale planning region

Zemgales plānošanas reģions ietver Jelgavu, Aizkraukles, Bauskas, Dobeles, Jelgavas un Jēkabpils rajonus.

Meža platības Zemgales reģionā aptver 21% no Latvijas mežu platībām. Kopumā reģions ir mazāk mežains nekā pārējie Latvijas reģioni, jo tajā meža platību īpatsvars ir tikai 14,8%, bet, piemēram, Vidzemes reģionā – 26,7%, Kurzemes reģionā – 24,1% attiecībā pret teritorijas kopējo platību. Pēc mežu īpatsvara (mežainuma), reģiona kopplatībā Zemgalē krasi izdalās divas rajonu grupas – tradicionālie Zemgales rajoni un Sēlijas rajoni (skat. 1. att.). Tradicionālo Zemgales rajonu mežu platības aizņem tikai 30% no reģiona teritorijas, taču meža nozares nozīmi Zemgales plānošanas reģionā būtiski palielina mežiem bagātie Aizkraukles un Jēkabpils rajoni, kuros meža platības aizņem gandrīz pusi teritorijas. Jāatzīmē, ka ar mežu klāto platību īpatsvars ir ļoti atšķirīgs ne tikai rajonu, bet arī pagastu līmenī.

Meža kvalitāte ir meža kā ekosistēmas vērtējums atkarībā no kokaudžu produktivitātes un stabilitātes. Viens no svarīgākajiem kvalitātes rādītājiem – skuju koku galvenās cirtes īpatsvars. Skuju koku galvenās cirtes ir vērtīgākā meža daļa, jo tajās iegūst zāgbaļķus, no kuriem eksportam ražo zāgmateriālus un citus vērtīgus sortimentus. Lapu koku galvenajās cirtēs, no kurām iegūst finierklučus, kā arī zāgbaļķus, jau ir liels mazvērtīgās koksnes īpatsvars kā, piemēram, papīrmalka un dedzināmā malka. Informācija rāda, ka vislielāko platību (74.4 %) mežos aizņem jaukto koku platības Zemgalē un tikai nedaudz atpaliek no šī rādītāja valstī kopumā (76.5 %).



Avots: Latvijas zemes balance 01.01.2005., VZD - 2005.

Source: Latvia's land area balance as of 01.01.2005., VZD - 2005.

1. att. Mežu platība (%) no rajona kopplatības

Fig. 1 Forest area as % of the total district area

Jāatzīmē, ka Zemgales reģionā, īpaši Bauskas un Dobeles rajonu mežu kopplatībā, augstu īpatsvaru ieņem tieši lapu koku audzes, attiecīgi 28% un 24% (Kaktiņš J., 2003; Saliņš Z., 2002).

Zemes reforma ir veicinājusi mežu īpašuma sadrumstalošanu, tāpēc Zemgales plānošanas reģionā pēc reformas ir vairāk nekā 14,3 tūkst. privātīpašnieku. Privātīpašnieku vēlme sociālās problēmas laukos atrisināt uz mežu rēķina veicinājusi trūkumus un nepilnības mežu apsaimniekošanā – privāto mežu pārciršanu un izcirsto platību apmežošanu nepietiekamā apjomā un kvalitātē, tajā skaitā koku nelikumīgu izcirstu u.c. dažāda rakstura meža pārkāpumus. Nepietiekamas īpašnieku zināšanas meža atjaunošanā, kopšanā un koksnes tirdzniecībā ir nopietns šķērslis, lai mežu īpašumus apsaimniekotu efektīvi un nenoplicinošā veidā. Kā var secināt no 2. attēla, atjaunoto meža platību apjoms no 2000. gada ir strauji samazinājies, un situācija tikai nedaudz ir uzlabojusies 2002. gadā. Šāda situācija var ievērojami pazemināt nākotnes meža ekonomisko vērtību.

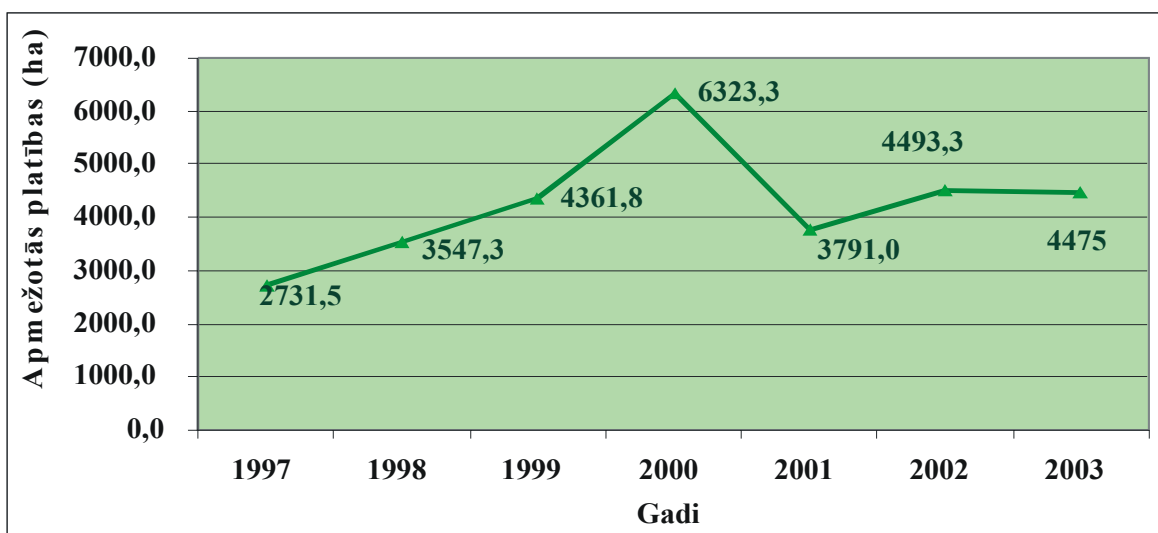
## 2. Inovāciju ieviešanas gaita reģiona meža nozares uzņēmumos

### 2. Innovation introduction progress at enterprises of the forest industry

Meža nozare ir viena no nozīmīgākajām nozarēm Zemgales plānošanas reģiona

tautsaimniecībā, kas balstīta uz dabīgi atjaunojamiem resursiem. Meža nozare ietver mežizstrādi, kokapstrādi, celulozi, papīra un mēbeļu ražošanu. Nozares devuma IKP aprēķina vajadzībām tiek lietots salīdzinoši šaurs definējums, kurā ietilpst: mežsaimniecība, kokapstrādes rūpniecība, celulozes un papīra rūpniecība, mēbeļu ražošana, ar koksni saistītie tirdzniecības pakalpojumi un ar koksni saistītie transporta pakalpojumi.

1. tabulā redzamais meža nozares sadalījums pa sektoriem ļauj secināt, ka vislielāko ieguldījumu IKP dod meža sektors un kokapstrāde. Jāatzīmē, ka abiem rādītājiem ir tendence palielināties. Iemesls tam, kādēļ tiek iekļauti transporta un tirdzniecības segmenti ir tas, ka diezgan liels skaits uzņēmumu galvenokārt nodarbojas ar koksnes resursu tirdzniecību vai pārvadāšanu. Ar meža nozari saistīta ir arī transporta nozare, it īpaši nelielās ostas un iekšzemes kravas pārvadājumi, tādējādi padarot to ļoti jūtīgu pret izmaiņām nozarē – gan negatīvām, gan pozitīvām. Būvējot koksne un tās produkti ir iekšzemes pārvadājumu balsts. Tādēļ meža nozares devuma novērtējums reģiona IKP ir jāaplūko kā minimālais skaitlis, kas patiesībā var būt lielāks.



Avots: autoru izveidots attēls pēc Valsts meža dienesta datiem.

Source: the figure developed by the authors according to State Forest Service data.

## 2. att. Meža platību atjaunošana Zemgales plānošanas reģionā

Fig. 2 Afforestation in Zemgale planning region

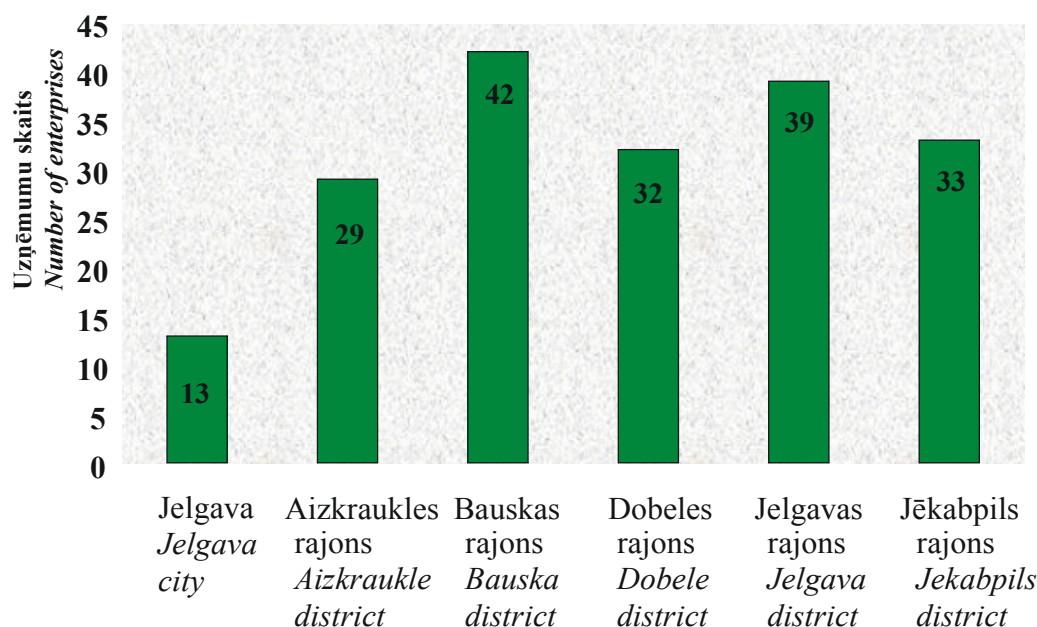
1. tabula/ Table 1

**Meža nozares sektoru ieguldījums Zemgales plānošanas reģiona IKP (milj. Ls)**  
***The contribution of the forest sector to the GDP of Zemgale planning region***  
**(mln. LVL)**

| Nr.<br>p.k.<br>No. | Nozares sektors<br><i>Industry's sector</i>                     | 2000  | 2001  | 2002  | 2003  | 2003/2000,<br>% |
|--------------------|-----------------------------------------------------------------|-------|-------|-------|-------|-----------------|
| 1.                 | Mežizstrāde<br><i>Logging</i>                                   | 12.6  | 12.6  | 14.4  | 15.2  | 120.6           |
| 2.                 | Kokapstrāde<br><i>Wood processing</i>                           | 29.9  | 30.8  | 32.6  | 34.1  | 114.0           |
| 3.                 | Tirdzniecība<br><i>Trade</i>                                    | 7.0   | 7.8   | 8.8   | 9.4   | 134.0           |
| 4.                 | Transporta pakalpojumi<br><i>Transportation services</i>        | 9.2   | 10.0  | 10.3  | 10.9  | 118.5           |
| 5.                 | Meža sektors<br><i>Forest sector</i>                            | 58.7  | 62.4  | 66.2  | 66.6  | 113.4           |
| 6.                 | Meža sektors (tīrais IKP) %<br><i>Forest sector (net GDP) %</i> | 1.1   | 1.1   | 1.1   | 1.1   |                 |
| 7.                 | Meža sektors/IKP %<br><i>Forest sector/GDP %</i>                | 1.5   | 1.5   | 1.5   | 1.5   |                 |
| 8.                 | IKP<br><i>GDP</i>                                               | 779.9 | 830.2 | 882.0 | 923.1 |                 |

**Avots:** CSP Reģioni skaitļos, laikraksts „Dienas bizness” [www.db.lv](http://www.db.lv).

**Source:** CSB Regions in numbers, newspaper “Dienas bizness” [www.db.lv](http://www.db.lv).



**Avots:** autoru izveidots attēls, izmantojot LLU arhīva un CSP datus.

**Source:** the figure developed by the authors using the LLU archive and CSB data.

**3. att. Ekonomiski aktīvo uzņēmumu meža nozarē sadalījums  
 pa Zemgales reģiona rajoniem**

**Fig. 3 Economically active enterprises in the forest industry broken down  
 by Zemgale region districts**

Meža nozarei ir liela nozīme Zemgales darbaspēka tirgū. Kopējais nodarbināto skaits 2004. gadā bija apmēram 6.4 tūkst., no kuriem 3.9 tūkst. strādāja mežsaimniecībā un kokmateriālu sagatavošanā, 1.5 tūkst. bija nodarbināti kokapstrādes un mēbeļu rūpniecībā. Ievērojamam skaitam Zemgales lauku saimniecību meža īpašums dod būtiskas priekšrocības ģimenes materiālo un garīgo vajadzību apmierināšanai, darba procesa modernizācijai, pārkārtojot ražošanu ES iekšējā tirgus konkurences spiediena pārvarēšanai (Zemgales mājas lapa ...).

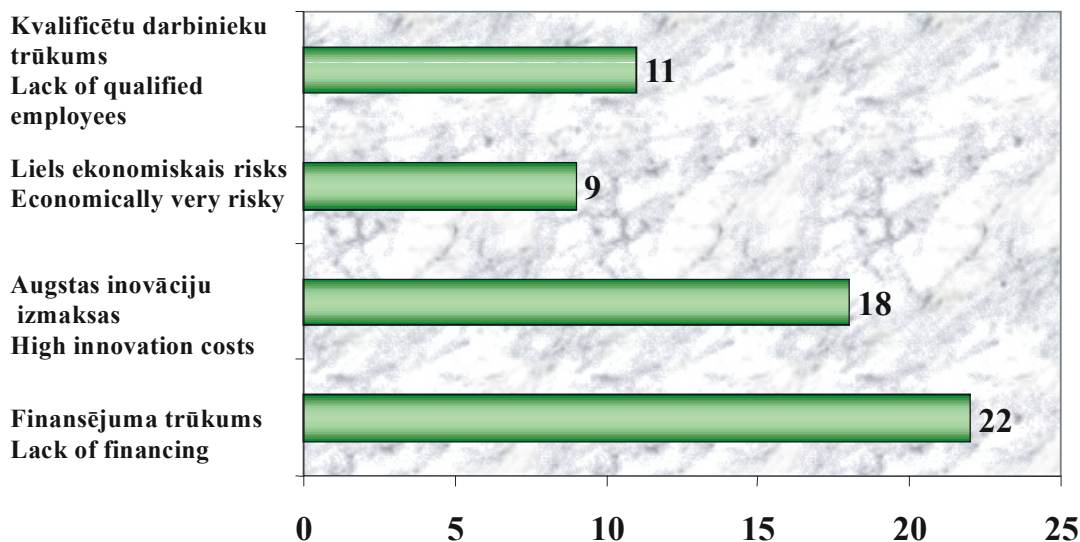
Ārvalstu investoru interese pēdējo divu gadu laikā ir ievērojami palielinājusies, par ko liecina jaunu rūpniecības uzņēmumu ar ārvalstu kapitālu attīstība Zemgalē, piemēram, Jēkabpils pilsēta attīstās par kokapstrādes uzņēmējdarbības centru. Kopumā Zemgalei ir plašs potenciāls uzņēmējdarbības attīstībai gan piesaistot ārzemju un vietējās investīcijas perspektīvākajās nozarēs, gan ceļot vietējā darbaspēka kvalifikāciju.

Kopumā Zemgales reģionā ekonomiski aktīvo uzņēmumu skaits 2004. gadā sasniedza 3069. Lielākai daļai Zemgales ekonomiski aktīvo uzņēmumu, t.i., 94,2%, ir neliels strādājošo skaits (Zemgales mājas lapa ...). Tas liecina, ka tieši MVU ir tie uzņēmumi, kas nosaka biznesa vidi šajā reģionā. Būtībā šāda sadrumstalota struktūra

ar daudziem nelieliem un sadarboties neaktīviem uzņēmumiem, kā arī nepietiekams inženiertehniskais zināšanu līmenis, neveicina inovāciju attīstību. Minētās problēmas reducējas uz to, ka mazs uzņēmums nespēj piesaistīt augsti kvalificētus speciālistus un ietekmēt tirgu, bet tikai sekot tam līdzi.

Meža nozarē darbojošos ekonomiski aktīvo uzņēmumu skaits 2004. gadā Zemgales plānošanas reģionā sasniedza 186 jeb 6% no kopējā ekonomiski aktīvo uzņēmumu skaita visās tautsaimniecības nozarēs Zemgales plānošanas reģionā. Reģiona lielākie uzņēmumi, kuru galvenais darbības veids saistīts ar mežsaimniecību, mežizstrādi vai kokapstrādi, ir SIA "Nelss", Latvijas-Zviedrijas kopuzņēmums "Latsin", SIA "Jelgavas mežs", SIA „Sēlijas mežs”, SIA "Ošukalni", SIA "Piebalgas", SIA "Bērkalnes" u.c. Pēc 3. attēlā redzamā Zemgales reģiona uzņēmumu skaita sadalījuma pa rajoniem var secināt, ka visvairāk ekonomiski aktīvie meža nozares uzņēmumi ir Bauskas un Jelgavas rajonos, ka arī atsevišķi izdalīta Jelgavas pilsēta (Zemgales mājas lapa ...).

Zemgales plānošanas reģionā ar mežsaimniecību un kokapstrādi nodarbojas gan zemnieku saimniecības, gan sabiedrības ar ierobežotu atbildību (SIA), gan arī Latvijas un



**Avots:** autoru izveidots attēls, izmantojot LLU arhīva un CSP datus

**Source:** the figure developed by the authors using the LLU archive and CSB data

#### 4. att. Inovatīvo attīstību kavējošie faktori meža nozares ekonomiski aktīvajos uzņēmumos Zemgales plānošanas reģionā

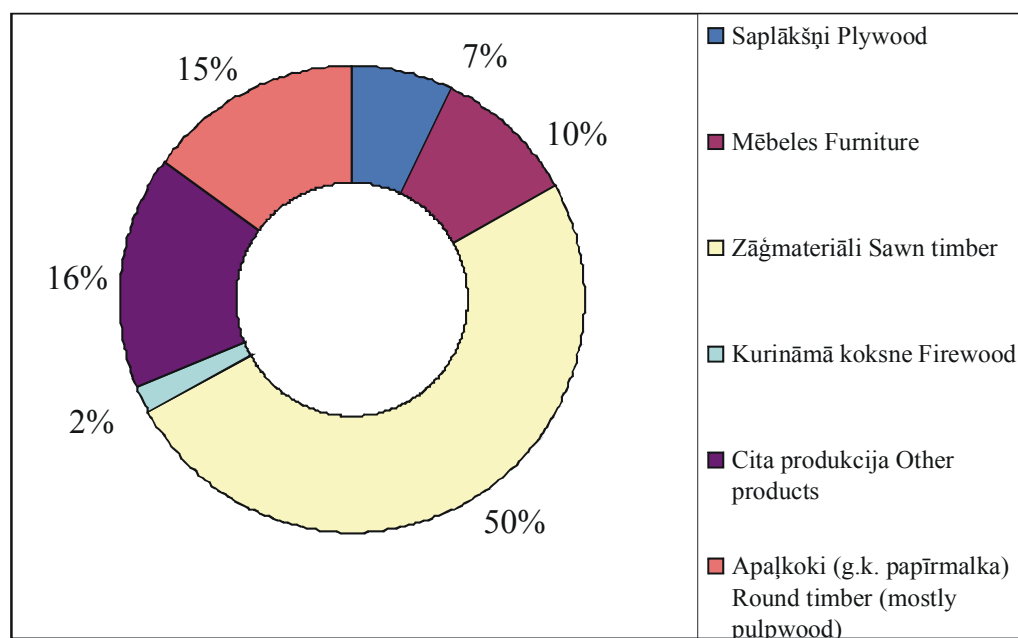
*Fig. 4 The factors hindering innovation in economically active enterprises of the forest industry in Zemgale planning region*

ārzemju kopuzņēmumi. SIA un Latvijas ārzemju kopuzņēmumi nepieder lauksaimniekiem, bet uz saimniecisko līgumu pamata sniedz tām dažādus pakalpojumus: koku zāģēšana, ēvelēšana, impregnēšana, būvdetaļu izgatavošana, kokmateriālu transportēšana. Reģionā ir ap 40% zemnieku saimniecību, kuru īpašumā ir gateris, bet darba apjomi ir nenozīmīgi,

No 4. attēla var secināt, ka inovatīvo aktivitāšu attīstību uzņēmumos kavē dažādi faktori. Galvenie attīstību kavējošie faktori ir finansējuma trūkums – 22% gadījumu, 18% – pārāk augstās inovāciju izmaksas. 11% gadījumu inovāciju ieviešanu apgrūtina kvalificētu darbinieku trūkums un 9% – pārāk lielais ekonomiskais risks, kas kavē nozares attīstību kopumā. Galvenais šķērslis ir ekonomiskie apsvērumi, jo Zemgales plānošanas reģionā vairums ir MVU, kas bez atbalsta iespējām nespēj veicināt inovatīvo attīstību. MVU pastāvēšanas un attīstības veiksmīgs risinājums būtu kooperācijas attīstība.

Kā redzams 5. attēlā, pašreiz eksporta apjomā vislielāko īpatnību dod zāģmateriāli –

49.5 %, apaļkoki (galvenokārt papīrmalka) – 14.6 %, bet mēbeles – tikai 10.3 % un saplākšņi – 7.4 %. Ir nepieciešams samazināt no Zemgales reģiona izvesto apaļkoku – galvenokārt papīrmalkas – apjomu, koksni apstrādājot un pārstrādājot uz vietas reģionā, kas ir ievērojama rezerve pievienotās vērtības ražošanā, līdz ar to arī ieguldījums reģiona attīstībā. Nozarē ir jāattīsta pievienotās vērtības radīšana koksnes tālākos pārstrādes posmos, ko var nodrošināt ar labvēlīgu nosacījumu radīšanu finanšu resursu piesaistīšanai mežu nozarei. Modernu iekārtu un tehnoloģiju ieviešanas veicināšana nodrošinās augstāku darba ražīgumu, augstāku produktu pievienoto vērtību un labāku produkcijas kvalitāti, kā arī sekmēs bezatlikumu tehnoloģiju ieviešanu kokapstrādē. Līdz ar kokapstrādes padziļināšanos un uzņēmumu specializācijas palielināšanos, pieaugs eksportēto produktu vērtība. Tā kā mežsaimniecība ir viena no nozīmīgākajām nozarēm un tās ietekme uz ekonomiku ir jūtama, koksnes produktu realizācijas cenas ievērojami palielinātu ieņēmumus budžetā. Neefektīvi izmantojot šo dabas resursu, tiek kavēta ekonomiskā attīstība.



Avots: autoru izveidots attēls, izmantojot LLU arhīva un CSP datus.

Source: the figure developed by the authors using the LLU archive and CSB data.

5. att. Koksnes produkcijas sadalījums pa veidiem eksporta struktūrā Zemgales plānošanas reģionā (%)

Fig. 5 The structure of exports for wood products in Zemgale planning region (%)

### 3. Izglītības un zinātnes situācijas vērtējums reģionā

#### 3. Assessment of the situation in the field of education and science in the region

Izglītības sistēmas un izglītības kvalitāti visobjektīvāk raksturo atbilstošās nozares konkurētspējas stabilitāte un iespējami lielākas pievienotās vērtības ražošana. Taču nozares speciālisti atzīst, ka līdzšinējie sasniegumi meža nozarē galvenokārt balstās uz veiksmīgu konkurenci ārējā tirgū ar salīdzinoši zemas pievienotās vērtības produktiem un sekmīgai tālākai attīstībai jāorientējas uz iespējami augstākas pievienotās vērtības radīšanu, jaunu produktu un noieta tirgu apgūšanu. Šajā sistēmā ļoti svarīga loma ir izglītībai un zinātnei.

Meža zinātni raksturo divas īpatnības:

1) tai ir reģionāls raksturs, jo rekomendācijas var pamatoties tikai uz tām atziņām, kas iegūtas konkrēta reģiona mežos;

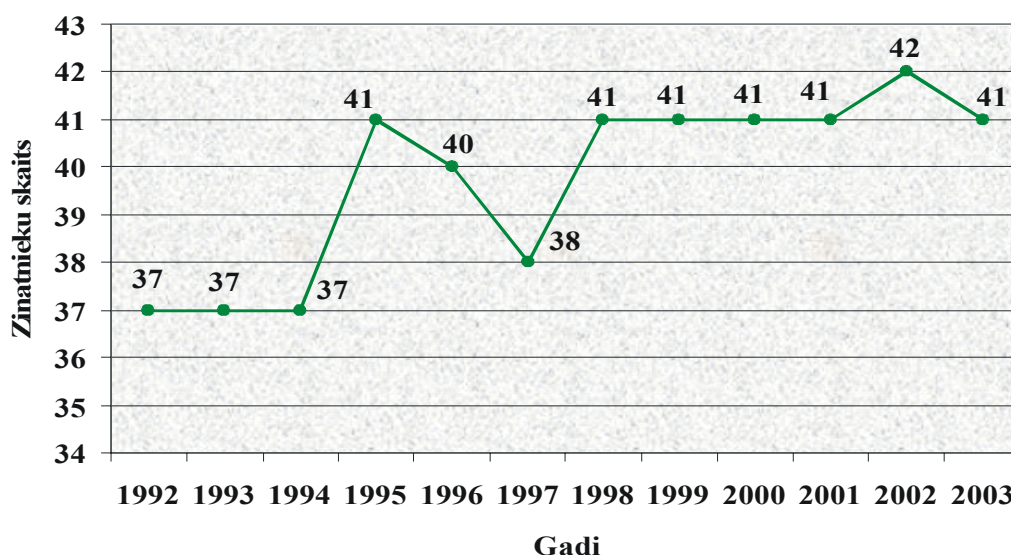
2) pētījumu ilgums sniedzas vairākos gadu desmitos. Pārtraucot pētījumus pat uz neilgu laiku, samazinās rezultātu vērtība. Tāpēc meža zinātnē ir svarīgi saglabāt pētījumu pēctecību.

Taču 6. attēla dati liecina, ka zinātnieku skaitam meža zinātnē ir tendence samazināties. Autori arī apstiprina, ka LLU Meža fakultātē ir nelabvēlīga mācībspēku vecuma struktūra un nepietiekams tā akadēmiskā personāla skaits, kam

ir zinātniskais grāds. Laikā no 2000. līdz 2002. gadam minētajā fakultātē neviens mācībspēks nav ieguvis doktora grādu, savukārt pieci zinātnieki ir ieguvuši doktora grādu 2003. un 2004. gadā. Pozitīvi un cerīgi ir vērtējams fakts, ka pēdējos gados palielinās doktorantūrā uzņemto skaits (LLU Meža fakultāte ...).

Zinātnes attīstību iespējams veicināt, motivējot spējīgākos studentus turpināt mācības nākamajos studiju līmeņos – maģistrantūrā un doktorantūrā. Autoru aprēķini liecina, ka laikā no 2002. līdz 2002. gadam studijas maģistrantūrā turpināja 22,6% no kopējā studentu skaita, bet 2004. gadā – 47,3%. Taču no 2001. gada strauji samazinās Meža fakultātē maģistra grādu ieguvušo studentu skaits. Tas nozīmē, ka samazināsies arī studējošo skaits augstākajos studiju līmeņos un zinātnes attīstība netiks pietiekami nodrošināta (Studiju darba dati ...).

Lai veicinātu izglītības un zinātnes attīstību un līdz ar to nozares attīstību kopumā, ir nepieciešama pārdomāta valsts politika. Kaut arī kopējais finansiālais atbalsts izglītībai un zinātnei meža nozarē reģionā laikā no 2000. līdz 2004. gadam ir palielinājies gandrīz 3 reizes (skat. 7. att.), tomēr nepieciešams būtiski palielināt valsts finansējuma apjomu, kā arī izmantot dažādās uzņēmumu atbalsta programmas jaunu produktu un tehnoloģiju mārketingam, ko piedāvā Eiropas Savienība.

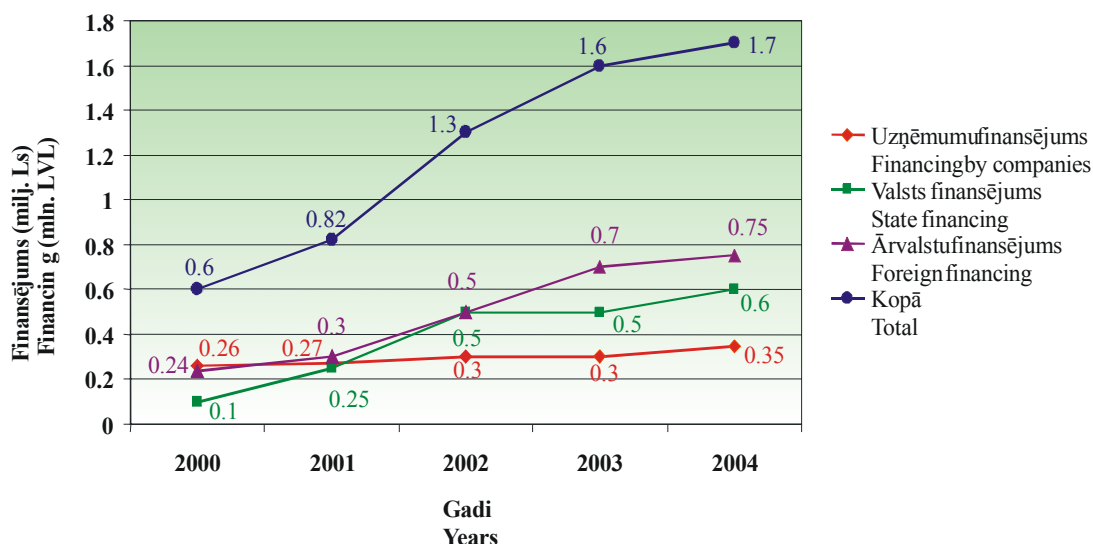


**Avots:** autoru izveidots attēls, izmantojot LLU arhīva un CSP datus.

**Source:** the figure developed by the authors using the LLU archive and CSB data.

#### 6. att. Zinātnieku skaita dinamika mežzinātnē

*Fig. 6 The dynamics of the number of scientists in forest science*



Avots: autoru izveidots attēls, izmantojot ZM datus.

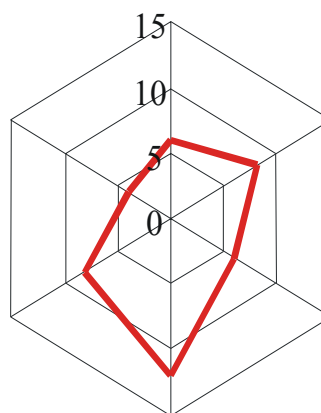
Source: the figure developed by the authors using data of the Ministry of Agriculture

7. att. **Finansējums izglītībai un zinātnei meža nozarē Zemgales plānošanas reģionā**  
*Fig. 7. The financing for education and science in the area of forestry in Zemgale planning region*

Zemgales reģiona nevienmērīga attīstība  
 Irregular development of Zemgale region

Neapmierinošas apmežošanas apjoma tendences  
 Unsatisfactory afforestation capacity trends

Mežsaimniecībai paredzēto līdzekļu pārdale citām vajadzībām  
 Reallocation of funds assigned to forestry for other needs



Mazs valsts atbalsts izglītībai un zinātnei  
 Insignificant state support for education and science

Nav inovācijām labvēlīga normatīvā vide  
 The legislative environment is not favourable for innovation

Kļūdaina meža nozares politikas īstenošana  
 Inaccurate implementation of forest policy

Avots: autoru izveidots attēls.

Source: the figure developed by the authors

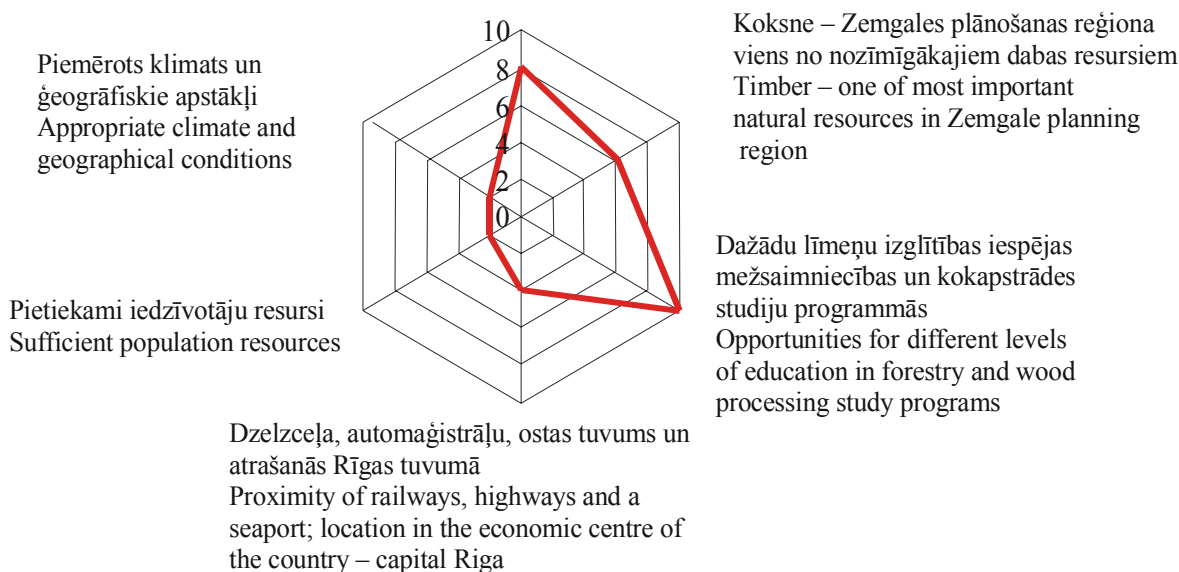
8. att. **Tīklveida atlikšanas metode draudiem Zemgales plānošanas reģionā**  
*Fig. 8. The reticulate method for threats in Zemgale planning region*

#### 4. Inovatīvās darbības veicināšanas pamatvirzieni meža nozarē

#### 4. The key directions for promoting innovative activity in the forest industry

Pilnvērtīgāku meža nozares izvērtējumu Zemgales plānošanas reģionā atspoguļo SVID analīze un tās rezultātā iegūto stipro pušu un iespēju, kā arī vājo pušu un draudu attēlošana ar tīklveida atlikšanas metodi.

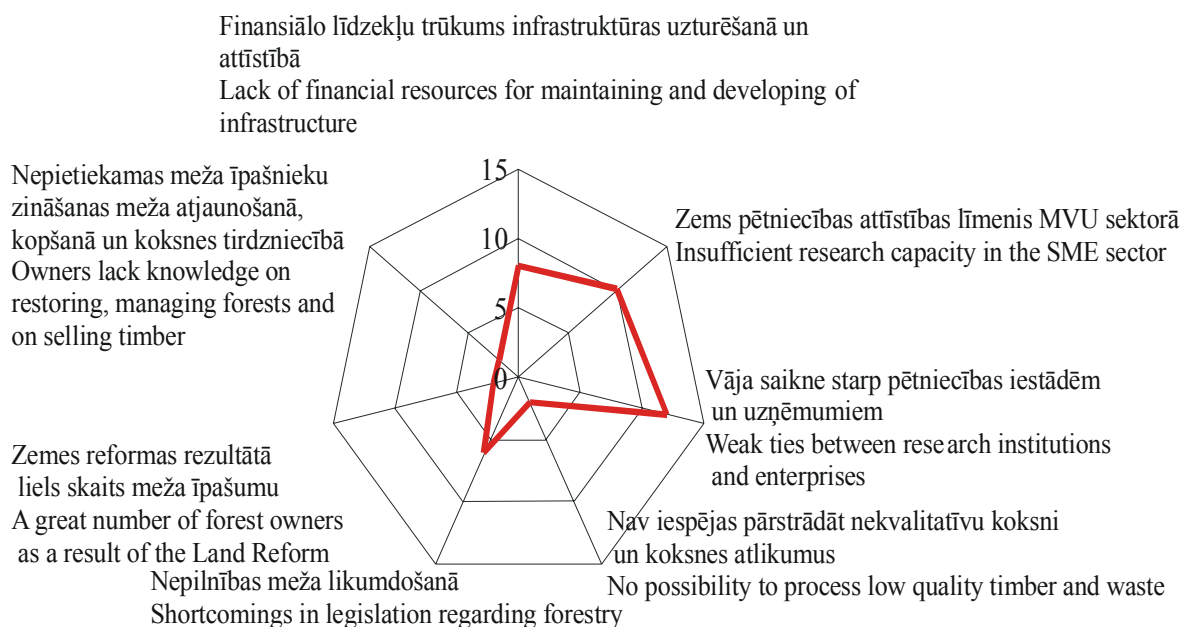
Projekta "Jēkabpils kokapstrādes uzņēmējdarbības parks" aktivitātes meža nozarē  
 Activities of project „Jēkabpils wood processing entrepreneurship park” in the forest industry in Zemgale planning region



**Avots:** autoru izveidots attēls.

**Source:** the figure developed by the authors.

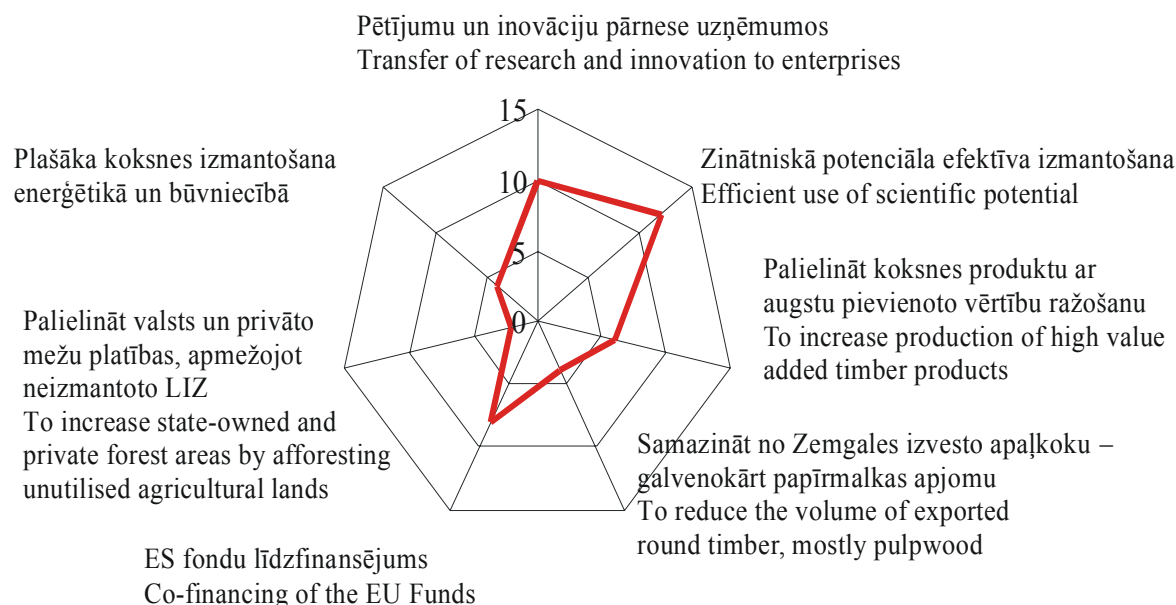
9. att. Tīklveida atlikšanas metode stiprajām pusēm Zemgales plānošanas reģionā  
 Fig. 9 The reticulate method for strengths in Zemgale planning region



**Avots:** autoru izveidots attēls.

**Source:** the figure developed by the authors.

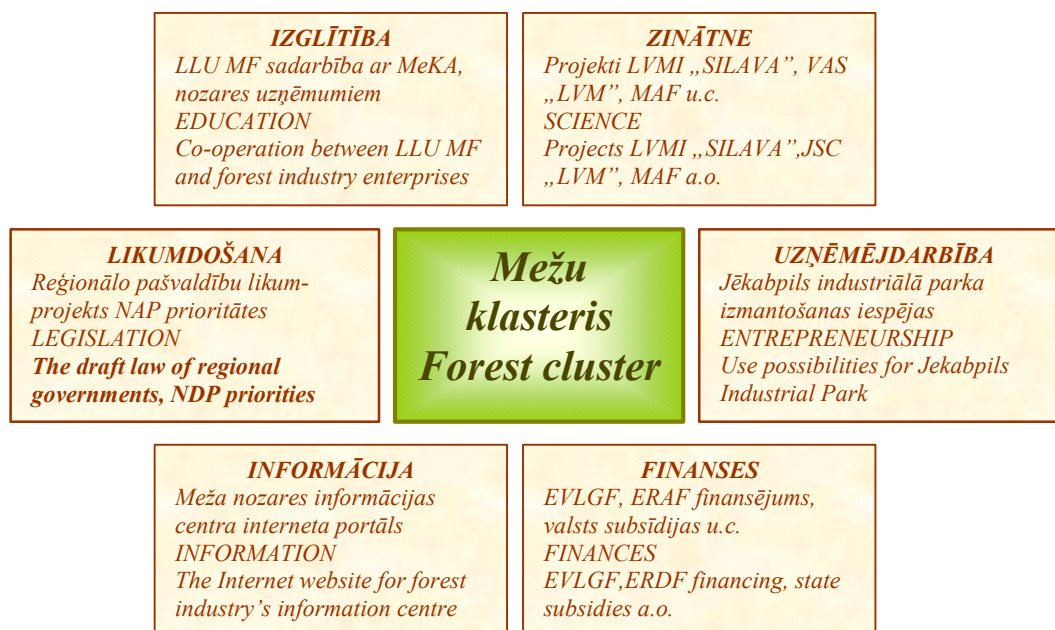
10. att. Tīklveida atlikšanas metode vājajām pusēm Zemgales plānošanas reģionā  
 Fig. 10 The reticulate method for weaknesses in Zemgale planning region



Avots: autoru izveidots attēls.

Source: the figure developed by the authors.

11. att. Tīkolveida atlikšanas metode iespējām Zemgales plānošanas reģionā  
Fig. 11 The reticulate method for opportunities in Zemgale planning region



Avots: autoru izveidots attēls.

Source: the figure developed by the authors.

12. att. Mežu klasteris  
Fig. 12 The forest cluster

Lietotās metodes rezultāti liecina, ka meža nozares galvenās vājās puses ir vājā saikne starp pētniecības iestādēm un uzņēmumiem, zema pētniecības attīstības līmenis MVU sektorā un

finansiālo līdzekļu trūkums infrastruktūras uzturēšanā un attīstībā. Lielākie draudi meža nozares sekmīgai attīstībai ir kļūdaina meža politikas īstenošana un mazs valsts atbalsts

izglītībai un zinātnei. Savukārt stiprās puses ir dažādu līmeņu izglītības iespējas mežsaimniecības un kokapstrādes studiju programmās un projekta “Jēkabpils kokapstrādes uzņēmējdarbības parks” aktivitātes Zemgales plānošanas reģionā. Iespējas, kas mazinās vājo pušu ietekmi un radīs priekšnoteikumus meža nozares sekmīgai attīstībai Zemgales plānošanas reģionā, ir zinātniskā potenciāla efektīva izmantošana, pētījumu un inovāciju pārnese uzņēmumos un ES fondu līdzfinansējums.

Uzņēmējdarbības līmenī cieši saistīti ir ne tikai mežsaimniecības, meža apsaimniekošanas, pirms- un tālākapstrādes uzņēmumi, bet arī loģistikas, finanšu nozares un celtniecības kompānijas, kā arī izglītības sektors. Meža nozares attīstība Zemgales plānošanas reģionā jāveido, izmantojot integrētu pieeju, kurā meža resursu apsaimniekotāju un meža nozares uzņēmumu aktivitātes ir sasaistītas ar tādām aktivitātēm, kā izglītība un zinātne, transports, informācijas tehnoloģijas, finanses un citas nozares, kas kopā veido starpnozaru koordinējošu sistēmu jeb mežu klasteri, kurš redzams 12. attēlā.

Klastera galvenais mērķis ir izstrādāt tādu uzņēmējdarbības, investīciju un normatīvo aktu vidi, kas sekmētu produkcijas ražošanu ar augstāku pievienoto vērtību, nodrošinot savstarpēji integrētas meža nozares attīstību un iekļaušanos pasaules tirgū, kā arī precīzas, pilnvērtīgas un operatīvas informācijas apmaiņas sistēmu starp valsts pārvaldes institūcijām un ražotājiem.

## Secinājumi

### *Conclusions*

1. Galvenā bāze inovāciju veidošanai ir augstākā izglītība, tehnoloģiju attīstība, fundamentālie pētījumi un pētījumu galarezultāta īstenošana.

2. Meža platības Zemgales plānošanas reģionā kopumā aptver 38.4% no reģiona.

3. Mežu īpatsvaru Zemgales plānošanas reģionā ievērojami paaugstina Aizkraukles un Jēkabpils rajonu iekļaušanās reģionā, kuros mežu platības aptver ap 50% no rajona platības.

4. Meža nozarei ir būtiska nozīme Zemgales plānošanas reģiona ekonomikā, ne tikai ar tradicionāliem nozares sektoriem, bet arī kā iekšzemes pārvaldījumu un reģiona iedzīvotāju nodarbinātības balstam.

5. Galvenais šķērslis inovāciju veicināšanai Zemgales plānošanas reģiona ekonomiski aktīvajos meža nozares uzņēmumos ir nepietiekami finanšu līdzekļi un tehnoloģiskais nodrošinājums.

6. Līdzšinējie sasniegumi nozarē galvenokārt balstās uz veiksmīgu konkurenci ārējā tirgū ar salīdzinoši zemas pievienotās vērtības produktiem, jo koksnes produktu eksporta apjomā vislielāko īpatsvaru dod zāgmateriāli un apaļkoki.

7. Lielākie draudi meža nozarei Zemgales plānošanas reģionā ir kļūdaina meža politikas īstenošana un mazs valsts atbalsts izglītībai un zinātnei.

8. Stiprās puses ir dažādu līmeņu izglītības iespējas mežsaimniecības un kokapstrādes studiju programmās un projekta “Jēkabpils kokapstrādes uzņēmējdarbības parks” aktivitātes Zemgales plānošanas reģionā.

## Priekšlikumi

### *Suggestions*

1. Jānodrošina zinātniskā un akadēmiskā personāla atjaunošana mežzinātnē, motivējot spējīgākos studentus studēt nākamajos studiju līmeņos – maģistrantūrā un doktorantūrā.

2. Lai veicinātu izglītības un zinātnes attīstību un līdz ar to meža nozares attīstību kopumā, valstij būtiski jāpalielina finansiālais atbalsts.

3. Meža nozares uzņēmumiem, īpaši mazajiem un vidējiem, aktīvāk jāizmanto dažādie atbalsta instrumenti, piemēram, ES strukturālo fondu atbalsts.

4. Mazo un vidējo uzņēmumu pastāvēšanas un attīstības veiksmīgs risinājums Zemgales plānošanas reģionā būtu kooperācijas attīstība, kurā uzņēmumi, savstarpēji kooperējoties, spētu veiksmīgi konkurēt tirgū.

5. Jāsamazina neapstrādātas vai daļēji apstrādātas koksnes eksporta daļas apjoms no Zemgales plānošanas reģiona, koksni apstrādājot un pārstrādājot uz vietas reģionā, kas b ū t u ievērojama rezerve pievienotās vērtības ražošanā, līdz ar to arī ieguldījums reģiona attīstībā.

6. Jāturpina uzņēmumu un pētniecības iestāžu veiksmīgā sadarbība pie PHARE projekta “Jēkabpils kokapstrādes uzņēmējdarbības parks”, kas palielinās kokrūpniecības i n d u s t r i j a s konkurētspēju ES valstu tirgos un veicinās pievienotās vērtības palielinājumu eksportprecei.

7. Meža nozares attīstība Zemgales plānošanas reģionā jāveido, izmantojot integrētu pieeju, kurā meža resursu apsaimniekotāju un meža nozares uzņēmumu aktivitātes ir sasaistītas ar izglītību un zinātni, informācijas tehnoloģijām, finansēm u.c. kas veido s t a r p n o z a r u koordinējošu sistēmu jeb mežu klasteri.

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## Demographic Situation in Lithuanian Rural Areas and its Changes Evaluation

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### *Abstract*

This article targets to analyse the basic indexes characterizing rural areas demographic situation and factors influencing its changes. The indexes of population, constituent parts of population related to sex, age, economic activities etc. were researched aiming to review the demographic situation in Lithuanian rural areas. The method of less squares is applied, choosing the appropriate mathematic function for estimating population and demographic changes. Age pyramid method is used for rural areas population age and sex structure evaluation. Pyramid form implies ratios and changes in male and female numbers. Absolute and relative birth, mortality and natural increase/decrease rates of rural areas inhabitants are researched; comparative and dynamic analyses with analogical indicators of urban inhabitants' are performed. Population age related indexes and their dynamics were researched. Analysis average life expectancy by sex changes was carried out. Rural areas inhabitants' migration was taken into account. Seeking to obtain impartial evaluation, the data starting with the year 1960 was used in this research; the data starting with the year 1995 used for more detailed analysis

At the beginning of the year 2005, 33.4 per cent of total Lithuanian population was rural areas dwellers. 51.6 per cent women among them and 48.4 per cent men. During the years 1959-2005 men proportion increases and women proportion reduces. However, definite sex disproportions are observed. At the beginning of the year 2005 absolute excess of women in the rural areas composed 44.5 thousand. 108 women fell on to 100 men. In the groups of elderly people (60 year and older) more distinct sex disproportion observed. Reduce of rural areas inhabitants' population is influenced by great ration of rural areas people deaths.

Rural areas demographic situation in Lithuania is not improving. Regional demographic changes are observed.

In accordance to EUROSTAT data, natural population increase/decrease in Lithuania in the year 2004 was the greatest in European Union states - minus 6 ‰. Comparative analysis of the Baltic States indicators evidences that Lithuanian rural areas demographic situation is very similar to that of Latvia and Estonia.

**Key words:** population, demographic situation, rural areas, Lithuania, natural increase/decrease, migration.

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### Introduction

After assessment to the European Union integrated rural areas development became one of priority spheres in Lithuania. It directly influences rural areas demographic situation. Demographic process are researched aiming to characterize demographic situation, to set the number of inhabitants, their composition changing tendencies, rural areas people natural increase/decrease and migration indicators, their influence to population changes.

Researchers views on demographic situation are contradictory. One group of researchers

(Stankūnienė V., Lazutka R., Sipavičienė A. 2005; Adlys P.G., 2001) state that rural areas demographic situation improves: the percentage of working age population increases, birth rates are growing, death rate is reducing, average life expectancy is increasing. Others (Jasaitis J., 2004; Pareigienė L., 2005) assert that demographic situation in the country gets worse, sex disproportions are becoming deeper, number of divorces is growing, marriages rate reduces, more and more children are born in extramarital, ageing processes become more complicated.

Our hypothesis – demographic situation in Lithuanian country is improving, we aim to carry

out objective research and establish the real situation. The goal of this work is to analyse and evaluate rural areas demographic situation and its changes. Object of the research – rural areas population in Lithuania.

The following objectives are set: to identify and evaluate indicators and methods used for demographic situation evaluation; to analyse and evaluate demographic situation in Lithuanian rural areas; to present conclusions and summaries on the research.

The methods used: comparative, age pyramids, relative values, logic analysis and synthesis. Less squares method is applied for choosing the appropriate mathematic function to smoothing data of time series. Line statistic function is applied to estimate the changes in population number. Research results are systemized in tables and presented graphically.

This work is based on scientific research data, population number; its natural increase/decrease and migration analysis made on the basis of the data Statistics Lithuania, EUROSTAT data base, Lithuanian Migration department information, information of Public Health Centre.

### Changes in rural areas population number and structure

The population number, its structure related to age, sex, economic activities and other peculiarities, sex mutual relations, especially in repro-

ductive age groups, natural increase/decrease population, migration indicators - characterize the demographic situation.

At the beginning of the year 2005 the population in Lithuanian rural areas was 1.1 mill. Rural areas inhabitants changes analysis since the year 1959 (when total population census took place) proves that absolute number of rural areas population constantly reduced, with the exception of the year 1995, when a little increase of population was stated. Positive net migration - the increase of number of rural areas inhabitants grew up, due to coming to rural areas of new farmers who retrieved their land and city dwellers that started farming in rural areas. Applying less squares method we established rural areas population changing tendencies in the period of 1959-2005. Using Regression module of subsystem Data analysis of spreadsheet Microsoft Excel, we derived the equation  $\bar{y}_t = 1599.7 - 62.32t$ , which evidences that number of Lithuanian rural areas dwellers tended to reduce and reduced annually by 62 thousand inhabitants. Calculations are statistically significant.

Population composition regarding sex and age are very significant state and separate regions demographic indicators. Population reproduction, labour force extend, school students and retired people numbers depend on them. In the year 2005 women composed 51.6 per cent of total rural areas dwellers. Comparing this number with 2001 total population census results, the situation did

Table 1

### Number of rural areas population

| Year  | Total rural population |      | %     |         | Absolute women excess, thousand | Per 100 men women |
|-------|------------------------|------|-------|---------|---------------------------------|-------------------|
|       | Thousand               | %    | Males | Females |                                 |                   |
| 1959* | 1670.8                 | 62.0 | 46.2  | 53.8    | 125.2                           | 116               |
| 1970* | 1561.2                 | 50.0 | 46.7  | 53.3    | 102.8                           | 114               |
| 1979* | 1356.6                 | 40.0 | 47.4  | 52.6    | 69.6                            | 111               |
| 1989* | 1188.0                 | 32.3 | 47.8  | 52.2    | 53.2                            | 109               |
| 1990  | 1179.8                 | 31.9 | 47.7  | 52.3    | 53.4                            | 109               |
| 1995  | 1184.8                 | 32.5 | 47.8  | 52.2    | 51.6                            | 109               |
| 2000  | 1155.0                 | 32.9 | 48.3  | 51.7    | 39.6                            | 107               |
| 2001* | 1152.8                 | 33.0 | 48.4  | 51.6    | 37.6                            | 107               |
| 2005  | 1143.9                 | 33.4 | 48.4  | 51.6    | 44.5                            | 108               |

Source: (4, 5, 6).

\* Census data.

not change (table 1). The positive change in equations structure from the year 2005 is slightly increased (0.5 structural point) men per cent rate in total number of rural areas dwellers.

For normal human change, equality in number of active groups of men and women is of vital importance. Recently this structure is out of proportion. Absolute women excess comprises almost 45 thousand. Comparing this number with the average of EU states (7), we could assume that sex disproportions are sharper in Lithuania (EU average is 105 women for 100 men). At the beginning of the year 2005 the greater part of rural areas inhabitants were men under 55, but in the groups of elderly people, due to higher number of deaths, women prevail. The differences are most noticeable in the groups of 60 year old and elderly people. Evaluating the changes in working power, it is essential to rate the number on working age population and its changes. Usually working age is limited by average life expectancy. Since

the year 1995 the number of working age population in rural areas is constantly increasing. However, this increase is affected by lengthening of pension age. Implementing pension's reform, the pension age will be extended until the year 2009 until it will reach 62.5 for men and 60 for women. 206 women fall to 1000 60 year old men, children under 15 in rural areas compose 20.4 per cent i.e. 2.5 structural point less than in the year 2000, the part of inhabitants of 60 and elder in the same time reduced from 24.6 per cent to 22.8 per cent.

In the year 2005 working age people compose the greatest part (56.8 per cent.) of rural areas dwellers (table 2). Comparing with the year 1995 the proportion of these people increased by 6.6 structural point.

In the period of 1995-2005 the part of children among rural areas dwellers reduced by 3.2 structural points and the part of pension age people by 3.4 structural points. Every fourth rural areas inhabitant is 60 years old or elder. Women com-

Table 2

**Rural areas population by age groups as of January**

| Year | Age groups        |             |             |
|------|-------------------|-------------|-------------|
|      | Under working age | Working age | Pension age |
| 1995 | 23.6              | 50.2        | 26.2        |
| 2000 | 22.9              | 52.5        | 24.6        |
| 2004 | 22.7              | 52.9        | 24.4        |
| 2005 | 20.4              | 56.8        | 22.8        |

Source: (4, 5, 6).

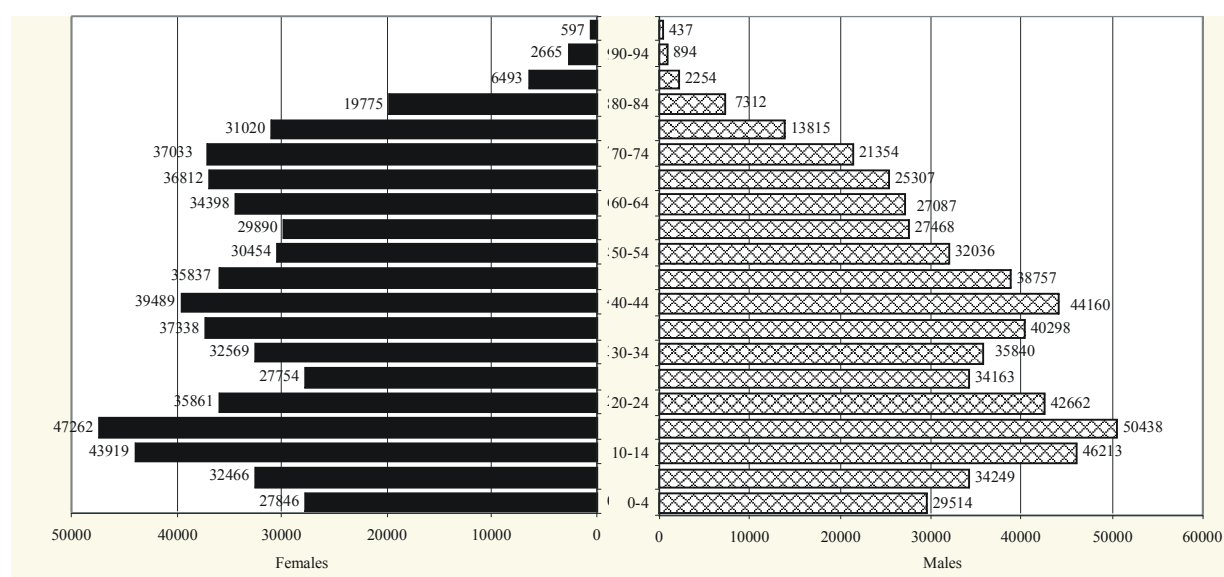


**Fig. 1 Rural areas population by sex age as of 1 January 2005**

pose the greater part of the inhabitants of this age. The age structure of rural areas dwellers differs greatly from city dwellers age structure. At the beginning of the year 2005 children part in total rural areas inhabitant's population comprised 4.1 structural point higher scale than in the urban areas.

The composition of population indicates the physical structure of every nation. The considerable part in population structural analysis is devoted to women of fertile age. In the year 2004 they constituted 34.2 per cent of rural areas population.

For population age structure research and presentation is applied age-pyramid method (Meyers, 1993; Čepulienė M., 1989; Čiulevičienė V., 2000).

Age structure of Lithuanian rural areas population is the result of past decades demographic processes. The protuberances illustrate the periods of high fertility: 1958-1962, 1970-1972 and 1985-1987. The bottom of the diagram shows the decreases of the fertility in the previous years, while the upper part of the pyramid indicates the intensification of ageing population, i.e., is the number of elderly people (60 year old and elder) in comparison with the total number of rural areas population. Pyramid of Lithuanian rural areas demographic situation evidences that the situation is regressive.

Birth, death tendencies and migration processes affected population composition regarding age and sex.

### **Natural increase/decrease**

Natural increase/decrease is characterized by absolute and relative births, deaths, natural increase and reduce indicators. Indicators of marriages and divorces characterize indirectly natural increase/decrease. Absolute indicators are not sufficient as they indicate only general number of demographic events (births, deaths, natural increase/decrease, marriages, divorce) at the definite period; relative numbers of demographic events for 1000 inhabitants enable to perform dynamic and comparative analysis of these indicators.

During the year 2004, 11 thousand rural areas inhabitants were born, that constitutes 33.7 per cent of all newly born; 17.8 thousand of rural areas inhabitants died, that constitutes 43.0 per cent of total deaths number. Natural population increase is negative – minus 6.8 thousand. Taking

as average 1000 inhabitants, the birth rate in rural areas are 9.6 and that is almost 13 per cent greater than in urban. However, analysing birth dynamics, the reduce tendency is observed with exception of Rebirth period when birth rates increased up to 16.3 ‰.

The fertility trends are reflected by fertility rates of women birth cohort. The analysis of the years 1995-2004 presents that fertility rate in the group of young women is lower, while fertility rate in the group of elderly women is almost constant. The average age of women giving birth for the first time is increasing. In the year 2004 it was 24.8 (average age – 27.4 year), and in the year 1995 these rates were accordingly 23.2 and 25.8. The greatest number of births in the year 2004 is among 25-29 years old women, considering the fact that in the year 2003 this indicator was greatest in the group of 20-24 years old women. Significant part of rural areas women -27.6 per cent have babies at a very young age - 15-19 years old, this part in urban is 1.8 time less. In rural areas the part of elderly 45-49 year old women having their babies is also greater. The rates of fertility in this group is 0.3, it is 3 times less for 100 women than in urban areas. Fertility rate analysis proves that 44.5 per cent of rural areas women have only one baby. Large families with 3 or more children constitute 26.1 per cent, only 1.1 per cent of women with higher education have three or more babies. Another tendency was observed as well - the longer is the marriage (10 years and longer), the more women have the third, the fourth, sixth and higher order baby.

Total fertility rate – average number of children, who were born during woman's reproductive period compose 1.26 (EU average – 1.4). Such low level of fertility does not ensure the natural change of generations. The most favourable demographic situation is when total fertility rate ensures at least simple inhabitants reproduction and balances nearly two, i.e. every mother has to have at least two babies. Every year boy's birth rate numbers girls births in 300-400 hundred.

Since the year 1990, rural areas dwellers mortality was very unstable. At the beginning of this period mortality increased by 17.6 per cent, in the years 1995-2000 it reduced to 11.2 per cent, but from the year 2001 until 2005 mortality were growing. Mortality of rural areas dwellers is 1.5 times greater than city dwellers. Positive change is that rural areas people mortality slightly reduced

(0.7 per cent), comparing the year 2003 and the year 2004. Mortality is not similar in different age groups. Infant mortality reduced (whose who died under 1 year old) by 13.6 ‰ in 1995, to 8.6 ‰ in 2003 and in the year 2004, 9 thousand more children died than in the year 2003. Infant mortality in rural areas is 1.4 times greater than in city. In the groups of 0-14 year old children the mortality was stable in the years 1995-2003 and composed 0.3 ‰, but in the year 2004 it increased more then twice. In the groups of 15-59 year old population the mortality reduced, but in the groups of 60 and elderly people, the mortality reduced in 1995-2000, from 2001 starts growing and in the year 2004 it reaches 44,7 ‰. Researching population mortality by sex, we observe that mortality among men and women are different. In the year 2004, 17.0 dead men fell on for 1000 rural areas male population i.e. this indicator was 20.6 per cent higher then among women (14.1). During the period of 1980-2000 men and women mortality reduced: men mortality reduced for 10.5 per cent, women mortality reduced for 8.4 per cent. Since the year 2001 both men and women mortality increase.

The main causes for death: circulatory system disease, malignant neoplasm, and external causes of mortality. The highest number of deaths, caused by the external causes of mortality, included the intentional self-harm – 27.0 per cent (15). During the year 2004, 68 rural areas residents were killed, that composes 36.9 per cent of all the crimes of this kind. The victims were mostly lonely old people, living in remote areas.

In 2004 per 1000 average rural areas population were 9.6 births and 15.5 deaths (figure 2).

Natural increase is negative -5.9 ‰. Comparing with urban areas population we evidence that rural areas population fertility rate is greater for 1.1 per cent, however, mortality even 5.5 per cent higher, that's why average life expectancy at birth

of rural areas male population is 4.1 years shorter than urban areas male residents and women life expectancy is accordingly 2.3 years shorter. Distinct differences are observed among rural areas male and female mortality, the average of future women life expectancy is 12.5 years longer than men. Many factors influence these disproportions, one of the vital among them is the great rate of male mortality for external reasons, as car crashes, poisoning with alcohol, suicides etc.

Marriage rate for 1000 inhabitants is 5.1‰ i.e. almost 14 per cent lower then in the city, but here we have less divorce – about 40 per cent. One of the negative consequences of divorces – the increasing number of one-parent families. Two thirds of divorced people have minor children. After the divorce about 10-11 per cent of children remain to live without one of parents (usually father). Number of children born in extramarital is also increasing. If we compare the ratings of the year 2004 with the ratings of the year 1990, the number of extramarital children increased 2.4 times. In 2004 extramarital rural areas children composed 65.7 per cent of total number of extramarital children. The greatest birth rate of extramarital children is among 25-29 year old women. One-third of extramarital children are registered only on the basis of mother's application, 0.6 per cent on the basis of foster fathers application. State social politics has influenced the number of extramarital children birth when lonely mothers were socially supported.

Average life expectancy at birth reflects social development, population health and mortality rates. Average life expectancy at birth is the probability index, indicating the average length of life of every person or a person, having attained the certain age, provided mortality rate of every age group of the population during the expected life remains unchanged. This life expectancy at birth for males reduced in 1990 but increased for females (table 3).

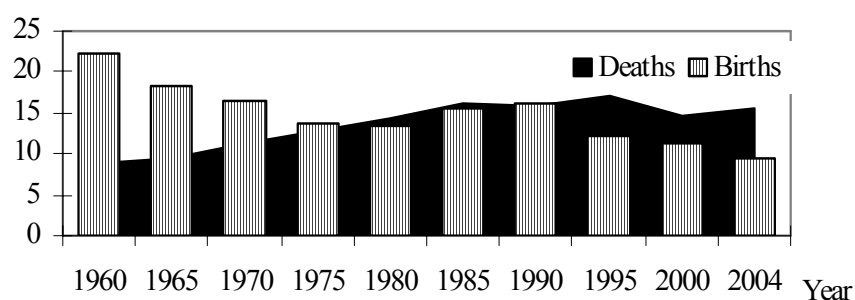


**Figure 2. Births and deaths per 1000 population in rural areas**

Table 3

**Life expectancy at birth**

| Indicators  |         | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 |
|-------------|---------|------|------|------|------|------|------|------|
| Rural areas | Males   | 64.1 | 60.8 | 64.6 | 63.7 | 63.5 | 63.8 | 63.8 |
|             | Females | 75.3 | 74.3 | 76.1 | 76.6 | 76.3 | 76.4 | 76.3 |
| Urban areas | Males   | 67.5 | 64.5 | 68.0 | 67.2 | 67.7 | 68.1 | 67.9 |
|             | Females | 76.8 | 75.5 | 78.2 | 78.2 | 78.3 | 78.7 | 78.6 |

Source: (4, 5, 6).

Table 4

**Index of ageing as of 1 January**

| Indicators         | 1995 | 2000 | 2004 | 2005 |
|--------------------|------|------|------|------|
| Rural areas        | 105  | 108  | 123  | 126  |
| Urban areas        | 67   | 87   | 110  | 114  |
| Total in Lithuania | 79   | 94   | 115  | 118  |

Source: (4, 5, 6).

The disproportion becomes sharper. That means average EU life expectancy at birth are significantly higher than in Lithuania – 70 years for men and 78 for women. They are higher compared with urban areas population.

Population ageing has negative influence on rural areas development. While the number of children declines, the number of pre school institutions also reduces but the number of health and social care institutions increases. The number of pre school institutions in rural areas recently reduced for 14 per cent, 409 comprehensive schools and 44 rural areas libraries were closed.

Population ageing is a complex phenomenon having various social and economic consequences. World governments are looking for ways how to avoid problems, arising due to population ageing and how to benefit from new opportunities that are opening due to increased employment age. In 2002 Madrid II World Ageing Assembly adopted Political Declaration and international Madrid plan of activities, the documents, binding many countries and Lithuania among them too. In the year 2002 Berlin regional strategy was adopted in Berlin, emphasizing the necessity of expansion of elderly people possibilities in social life. Lithuania tries to adjust actions and efforts of local governmental self-governing structures and non-governmental institutions while implementing these documents into life. In 2004 National population ageing consequences overcoming strategy was adopted, defining national priorities, actions and their adjustment with internationally accepted strategies.

Various absolute and relative indicators define population ageing. Number of population that is not included into the group of fertile age, demographically is considered elderly. In many countries of the world economical criteria is applied to the term elderly people, it usually means cancellation of economical activities and retirement. Index of ageing (number of persons aged 60 and over per 100 children aged 0-14), shows that ageing processes in rural areas are progressing but they are not as severe as in urban areas (table 4).

People of 80 and older are considered to be long-lived. At the beginning of the year 2005, the number of long-lived people comprised 40.6 thousand, 26.8 per cent men among them. The number of long-lived people in the year 2005 in comparison with the year 2003 increased up to 1000, but men's relative part reduced up to 3.8 structural points. Two factors influencing population ageing are the following: the decline in birth rate and the increase in life expectancy. Sustained demographic prognosis evidence that in the year 2005 elderly people will constitute 23 per cent of population (9). Population ageing reduces competitiveness in labour as the number of pension population increases; the part of supported population is growing. Population ageing reduces peoples' economic efficiency, their mobility, and health state. In 2004 every fourth rural areas inhabitant was a pensioner.

Various means are applied seeking to humanize the consequences of ageing and to improve economic, social and cultural situation. Lithuanian government had adopted learning

for life and national population ageing overcoming strategies, establishing basic factors for improving demographic situation.

Demographic processes are related to social practice innovations. Developmental processes of social support and security depend on demographic processes development. Due to worsen economic situation in the last decade of the past century, many families could not decide to have more children due to their living conditions. Negative consequences of population ageing result in growing number of old people. Consequently, the number of people who need support increases. This has negative influence on the rates of employed population, in relation to dependant part of it. Ratings of pensioners grow, the other problem becomes essential - the number of youth reduces.

This could result in lack of qualified young workers, as employers have to replace retired people.

Working age and pension population number rates and changes are of vital importance for social demographic view. Dependency ratios i.e. children and elderly people ratio to working age people clearly indicate economic burden of population.

The number of elderly people falling on to 100 working age rural areas inhabitants reduced for 30.1 per cent from 1995 to 2005, children for – 23.8 per cent. Extension of working age mainly causes these changes. Comparing economic burden indexes in rural areas and in urban areas we observe that the part of elderly population in urban areas is 11.7, children population 8.3 %<sub>0</sub> less then in rural areas for 100 residents of the same age.

Table 5

**Statistics characteristics of times series**

| Indicators | Variance explained % | Equation                              | p-level    | Predict |      |
|------------|----------------------|---------------------------------------|------------|---------|------|
|            |                      |                                       |            | 2006    | 2007 |
| Births     | 75.7                 | $\bar{y}_t = 11.56 + \frac{11.50}{t}$ | $p < 0.05$ | 12.6    | 12.5 |
| Deaths     | 93.1                 | $\bar{y}_t = 5.67 + 2.55t - 0.16t^2$  | $p < 0.05$ | 14.7    | 13.6 |
| Marriages  | 33.5                 | $\bar{y}_t = 6.64 + 0.48t - 0.06t^2$  | $p > 0.05$ | 4.1     | 3.1  |
| Divorces   | 92.7                 | $\bar{y}_t = 0.14 + \frac{0.24}{t}$   | $p < 0.05$ | 2.8     | 3.0  |

Table 6

**Main demographic indicators in Lithuania in rural areas by county, 2004**

| County         | Per 1000 population |        |                           |           |          | Population by age groups, % |           | Ageing index |
|----------------|---------------------|--------|---------------------------|-----------|----------|-----------------------------|-----------|--------------|
|                | births              | deaths | natural increase/decrease | marriages | divorces | 0-14 year                   | 60 + year |              |
| 1 Alytus       | 8.4                 | 19.0   | -10.6                     | 4.7       | 2.4      | 19.1                        | 21.4      | 111          |
| 2. Kaunas      | 9.2                 | 14.1   | -4.9                      | 5.1       | 2.5      | 18.2                        | 19.9      | 109          |
| 3. Klaipėda    | 10.7                | 13.7   | -3.0                      | 6.0       | 2.5      | 18.8                        | 18.6      | 99           |
| 4. Marijampolė | 10.5                | 15.3   | -4.8                      | 5.2       | 2.5      | 20.9                        | 20.4      | 98           |
| 5. Panevėžys   | 9.3                 | 15.7   | -6.4                      | 4.8       | 2.7      | 19.1                        | 21.6      | 113          |
| 6. Šiauliai    | 10.0                | 14.1   | -4.1                      | 4.8       | 3.0      | 19.6                        | 19.8      | 101          |
| 7. Tauragė     | 9.3                 | 15.2   | -5.9                      | 5.4       | 2.4      | 21.2                        | 20.3      | 96           |
| 8. Telšiai     | 10.7                | 13.6   | -2.9                      | 5.6       | 2.6      | 21.6                        | 18.3      | 85           |
| 9. Utena       | 8.0                 | 21.1   | -13.1                     | 4.8       | 2.3      | 17.2                        | 23.0      | 134          |
| 10. Vilnius    | 9.5                 | 16.1   | -6.6                      | 5.2       | 2.3      | 16.9                        | 18.5      | 110          |

Source: (17).

Birth, mortality, marriage, divorce rates 1960-2004 years time series statistics characteristics are presented in table 5.

Regional demographic situation research enables to state that the worst situation is in Utena and Alytus counties. We observe the lowest rates of births and the highest rates of deaths taken for 1000 inhabitants in these regions, the negative natural increase is also the greatest here and the processes of ageing are the most intensive. The best demographic situation established in Telšiai and Klaipėda counties (table 6).

Economists agree that demographic situation depend on many factors, one of the most important among them is life quality. Every second rural areas dweller works on his farm. Agriculture in rural areas absorbs labour power exceed, occurring in other sectors of economics. This makes a background for small natural farm existence, which becomes the only one source of living for many rural areas dwellers. Such kind of farming does not assure full employment of farmers and their family members, it is not efficient production, giving enough income for a family.

### **Migration of rural population**

In the age of political, economic and social changes migration and its forms gain quite a different shape. Until the admission to the EU, illegal, long period or permanent migration prevailed. Recently temporal migration dominates, fulfilling mainly economic function mainly, preserving social links; not full families migration is frequent (parents migrate without children, or one of spouses migrates), extreme forms of migration appear such as humans, particularly women, trade.

The factors, constituting migration flows, vary. Until the admission to the EU, migration in Lithuania could be characterized as illegal and very extensive, especially young population migration. It was influenced by shortage of working places, low salaries and new opportunities to assure at least minimum standard of living abroad. Unstable situation in labour market, wish to reduce social risks to have additional source of income, not related to economic status are the factors affecting migration. International conventions and agreements, protecting human values and rights, Euro integration processes also have consequences on migration.

The scientific research carried by social research institute researchers professor V. Stankūnienė, R. Lazutka, A. Sipavičienė and others (17). proves that causality of migration processes is cumulative as migration varies in its context of decision making - to migrate or not to migrate. What is more, different factors affect different levels – individual, household, community, and country. Nearly 10-20 thousand of population migrates every year (11), looking for employment and better salary.

In 2004 21.3 thousand of Lithuanian rural areas population moved, 17.5 thousand moved from rural areas, 3.8 thousand came to live there. Migration net is positive – 3.4 thousand. Greater part (82.2 per cent) of this population moved to urban areas. This kind of migration decline form 1995 until 2002 started growing significantly since 2003. More and more people move from urban to suburban areas, the number of people moving from urban to rural areas is increasing.

Migration numbers related to age groups indicate that usually young 25-29 years old people move from rural areas to urban (46.2 per cent), the newcomers are mainly elderly people. Women constitute the greater part of 25-29 year old leavers group, more men in the group of 30-49 years old inhabitants move to rural areas. Recently the picturesque rural area's atmosphere often attracts city dwellers, longing for nature and fresh air.

Migration caused different rates of population increase (reduce) in different districts of Lithuania in 2004. In accordance to rural areas population net all Lithuanian municipalities could be divided into 2 groups: having a positive migration net and having a negative migration net. Urban processes encourage population movement to suburban areas; on the other hand they are attracted by biggest urban. It is evident that rural areas people migration is the most intensive in the regions of biggest urban. More inhabitants from remote areas move than arrive. We accept L. Pareigienė (L. Pareigienė, 2005) position that agriculture cannot any longer assure sufficient level of living standard; this is evidenced by negative net of very productive Pasvalys, Radviliškis, Biržai, Šakiai districts.

### **Comparison of demographic situation in the Baltic States**

Demographic situation in Lithuania is similar to that one in the other Baltic States. The common

Table 7

**Demographic situation indicators in the rural areas in 2004**

| Indicators                    |                           | Lithuania | Latvia | Estonia* |
|-------------------------------|---------------------------|-----------|--------|----------|
| Share of rural population, %  |                           | 33.4      | 32.2   | 30.7     |
| Population by age grouping, % | 0-14                      | 22.7      | 15.4   | 18.2     |
|                               | 60 +                      | 24.4      | 21.8   | 22.1     |
| Ageing index                  |                           | 123       | 124    | 122      |
| Per 1000 average population   | Live birth                | 9.6       | 8,8    | 9,6      |
|                               | deaths                    | 15.5      | 13,8   | 13,4     |
|                               | Natural increase/decrease | -5.9      | -5,0   | -3,8     |
|                               | marriages                 | 5.6       | 4,5    | 4,2      |
|                               | divorces                  | 3.2       | 2,3    | 2,9      |
| Total fertility rate          |                           | 1,26      | 1,24   | 1,40     |
| Life expectancy at birth      | males                     | 63.8      | 64,9   | 66,0     |
|                               | females                   | 76.3      | 75.7   | 76,9     |

Source: (13, 14).

features of all of them are that rural areas dwellers population structure is quite the same; women constitute more than half of it. Women dominate in the groups of elderly people. Children per cent ratio is less than that of elderly people. Life expectancy at birth for rural areas men is shorter, due to higher death rates.

In comparison to the other Baltic States, the ageing index, the part of elderly people and death rates of males are the highest in Lithuania but the rates of extramarital children are the lowest ones.

## Conclusions

1. There is no basis to accept hypothesis that rural areas population demographic situation in Lithuania is improving.

2. Applying age pyramids method for demographic situation research we conclude that in accordance to its shape Lithuanian demographic situation is estimated as regressive.

3. Sharp tendencies of rural areas population ageing and depopulation are observed.

4. Demographic situation in rural areas is worse than in urban areas. Disproportions related to sex are observed in elderly people age groups.

5. Sharp differences of regional demographic situation.

6. Comparative analysis with other Baltic states proves that Lithuanian demographic situation is very similar to that one in Latvia and Estonia.

7. Complex approach to the problem is essential while solving demographic and life stan-

dard improving problems: the complexity of political, economical and social means is essential, gaining benefit from EU support for rural areas physical and social infrastructure development, increasing efficiency of rural areas communities and variability of economic activities.

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## **Darba resursi un to kvalitāti ietekmējošie faktori Latgales reģionā** ***Labor Resources and Their Quality Affecting Factors*** ***in Latgale Region***

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### **Abstract**

Since 1990, when Latvia announced its independence, the system of limited economics is being replaced by mixed economy. The ownership sphere is divided into two spheres: the economic environment of private sector is rapidly developing side by side with the public sector, which is fundamentally altering the environment of entrepreneurship and people's attitude towards it. Latvia as the member state of the European Union has to undertake definite obligations in order to participate in cooperation programs. The EU regulations are aimed at developing and arranging several economic activities, one of which is the increase of the welfare level of human resources. A priori is the issue about involvement of this resource in the economic cycle. In Latvia, considerable differences regarding economical development are observed at regional level. There are economically stable and progressing areas and also underdeveloped areas. For example, Riga and its surroundings are persistently developing in all spheres, but Latgale is advancing slowly. One of most essential elements in the process of development is human resources, their potential, and quality of labor resources. The concept "quality" is multiform and can be interpreted variously. Characterization of the concept of labor resources and their quality and survey of labor resources parameters in Latgale will allow defining general factors that affect the quality of labor resources.

**Key words:** human resources, labor resources, quality of labor resources, factors affecting quality of labor resources.

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### **Ievads**

#### ***Introduction***

Jebkuras pasaules teritorijas, valsts, reģiona tautsaimniecības darbība ir vērsta uz cilvēka vajadzību apmierināšanu. Cilvēks ir gan darītājs, gan patērētājs. Ekonomikas pamatjautājums ir cilvēka labklājības līmeņa kāpināšana, sabalansējot ekonomisko sektoru darbību.

Cilvēku vajadzību apmierināšanu nodrošina ražošanas un tirgus procesu piedāvājuma un pieprasījuma mijiedarbība. Šo procesu organizēšanai kā cilvēcisko faktoru izmanto cilvēkresursus. Cilvēkresursu spēja piedāvāt sevi darba tirgū veido darba resursus. Darba resursu kvalitātes potenciāls Latvijā, tās reģionos ir atšķirīgs.

Latgale kā viens no Latvijas reģioniem savā attīstības posmā šodien ir ekonomiski nestabils reģions. Uzņēmējdarbības vide attīstās lēniem tempiem. Viens no būtiski svarīgiem elementiem

šīs vides pilnvērtīgai attīstībai ir darba resursi, to kvalitāte.

Lai noskaidrotu apstākļus, kas iespaido darba resursu zemo kvalitāti Latgalē pēdējo piecu gadu laikā, autore izvirza šādu hipotēzi: *Latgales reģionā uz darba resursu kvalitāti iedarbojas dažādi negatīvi faktori.*

Darba mērķis: *novērtēt darba resursus un to kvalitāti negatīvi ietekmējošos faktorus Latgales reģionā.*

Darba mērķa sasniegšanai izvirzīti šādi uzdevumi:

- 1) teorētiski raksturot cilvēkresursu, darba resursu un to kvalitātes jēdzienus;
- 2) izpētīt un raksturot Latgales reģiona darba resursus;
- 3) noteikt darba resursu kvalitāti negatīvi ietekmējošos faktorus Latgales reģionā.

Pētījuma veikšanai izmantotas monogrāfiskā izpēte, ekspertvērtējums, aprēķinu konstruktīvā metode.

## Rezultāti un diskusija *Results and discussion*

Pats kvalitātes jēdziens nav mūsdienu izgudrojums – jau pirms daudziem gadu simtiem cilvēks apzinājās, cik būtiska nozīme ir viņa izgatavotās lietas izskatam, formas atbilstībai noteiktām pircēja prasībām, tātad – kvalitātei.

Latvijā kopš 1990. gada iezīmējas brīvās tirgus ekonomikas tendences, tātad resursu sadales process notiek ar tirgus starpniecību, kā arī raksturīgā pazīme – privātīpašuma pastāvēšana – maina komanditekonomikas būtību pamatos. Lai šodien cilvēks varētu pilntiesīgi piedalīties tirgū ar savu produktu vai pakalpojumu, ir nepieciešami noteiktu kvalitatīvu resursu ieguldījumi. Jebkuras uzņēmējdarbības pamatā ir galveno ražošanas resursu bloku sekmīga mijiedarbība, t.i., gan materiālo, gan cilvēkresursu saskaņota, koordinēta un efektīva kopdarbība. To veido darbs un uzņēmējspēja. No ekonomikas viedokļa tiem ir visstraujākā reakcija pret gaidāmām pārmaiņām ekonomikā kopumā un uzņēmējdarbības vidē. Darba resursu potenciāls savukārt atkarīgs no tā īpašībām, tieksmēm, vēlmēm un stāvokļa konkrētā laikā un vietā.

## 1. Latgales reģiona cilvēkresursu raksturojums

### *Characterization of human resources in the region of Latgale*

Cilvēkresursus var raksturot kā vislielāko vērtību valstī, jo ekonomiskais cikls veidots uz uzņēmējdarbības pamata, kas savukārt balstās uz zināšanām, bet zināšanu avots ir cilvēks. Ir būtiska atšķirība starp cilvēkiem kā vērtību un tradicionālajām finanšu un tehnoloģiju vērtībām vai līdzekļiem. Biznesa ideju var īstenot tikai ar cilvēka līdzdalību (Gratone, L., 2004).

Tādēļ šodien it sevišķi jāpievēršas šī resursa izpētei un tā lomas palielināšanai jebkuras valsts vai reģiona ietvaros. Jāzina, kā savu precī noģādāt tirgū noteiktā laikā, vietā, par noteiktu cenu. 1901.-1910. gados atbilde uz šo jautājumu būtu: veiksmīgas darbības pamats ir pietiekams finanšu kapitāls, kas ļauj paplašināt ražošanu; 50. gados – tehnoloģiskās priekšrocības, patenti, ko uzņēmumi veiksmīgi izmantoja savu pozīciju nostiprināšanā. 2000. gadā patenti savu vērtību zaudē dažu sekunžu laikā, agrāko laiku izšķirošajām priekšrocībām vairs nav būtiskas nozīmes, centrā ir cilvēks.

1. tabula / *Table 1*

### Latgales reģiona cilvēkresursu raksturojums 2000.-2004. g. *Characterization of human resources in the region of Latgale in 2000-2004*

| Rādītāji ( <i>Indices</i> )                                                                          | Gadi / <i>Years</i> |         |         |         |         | 2004 %<br>pret / <i>to</i><br>2001 |
|------------------------------------------------------------------------------------------------------|---------------------|---------|---------|---------|---------|------------------------------------|
|                                                                                                      | 2000                | 2001    | 2002    | 2003    | 2004    |                                    |
| Iedzīvotāju kopskaits / <i>Total of population</i>                                                   | 384 428             | 382 159 | 378 135 | 374 817 | 372 850 | 97,6                               |
| 1.t.sk. vīrieši / <i>of which men [%]</i>                                                            | 47,0                | 46,9    | 46,7    | 46,9    | 46,5    | 99,1                               |
| sievietes / <i>women [%]</i>                                                                         | 53,0                | 53,1    | 53,3    | 53,1    | 53,5    | 100,8                              |
| 2.t.sk. pilsētās / <i>of which in cities [%]</i>                                                     | 17,7                | 17,1    | 17,4    | 17,5    | 17,0    | 99,4                               |
| laukos / <i>in countryside [%]</i>                                                                   | 42,0                | 42,9    | 42,5    | 42,4    | 42,8    | 99,8                               |
| lielpilsētās / <i>in cities [%]</i>                                                                  | 40,3                | 40,1    | 40,1    | 40,1    | 40,2    | 100,2                              |
| Vidējais iedzīvotāju blīvums uz 1 kv.km<br><i>Average density of population per 1 km<sup>2</sup></i> | 26,4                | 26,3    | 26,1    | 25,8    | 25,5    | 97,0                               |
| t.sk. vidēji lielpilsētās<br><i>of which on average in cities</i>                                    | 1 722,3             | 1 701,9 | 1 682,9 | 1 856,0 | 1 656,7 | 97,3                               |
| Iedzīvotāji līdz darbaspējas vecumam<br><i>People up to the age of working capacity)</i>             | 69 581              | 66 114  | 62 770  | 59 683  | 59 070  | 89,3                               |
| Iedzīvotāji darbaspējas vecumā<br><i>People at the age of working capacity</i>                       | 226 044             | 230 442 | 229 906 | 229 526 | 229 195 | 99,5                               |
| Iedzīvotāji virs darbaspējas vecumam<br><i>People over the age of working capacity</i>               | 88 803              | 85 603  | 85 459  | 85 608  | 84 585  | 98,8                               |

**Avots:** autores pētījums pēc CSP datiem.

Ne visās valstīs ekonomikas politikā galvenais jautājums ir cilvēkresursu attīstība. Tikai izstrādājot tautsaimniecības attīstības programmu un tai atbilstošu darba tirgus politiku un nodarbinātības koncepciju, ir realizējama cilvēka līdzdalība biznesā. Tādēļ šodien jo īpaši jāpievēršas šī resursa izpētei un tā lomas palielināšanai neatkarīgi no tā, vai izmanto darbu vai uzņēmējspējas.

Latgales reģionu veido Balvu, Krāslavas, Preiļu, Ludzas, Rēzeknes un Daugavpils rajoni ar 12 pilsētām un 2 republikas nozīmes pilsētām – Daugavpili un Rēzekni (lielpilsētas), un 138 pagasti ar kopējo platību 14 550 kv.km, kas ir 22,5 % no visas Latvijas teritorijas, kur lielpilsētu platība veido 90 kv.km (LR statistikas dati, 2003).

Raksturojot reģiona cilvēkresursus, 1. tabulā attēlotais dinamiskais griezumā rāda tendenci svārstībām atkarībā no izvēlētajā rādītāja. Piemēram, salīdzinot procentuāli 2004. gada iedzīvotāju kopskaitu pret 2001. gada to pašu rādītāju, vērojams samazinājums par 2,4%. Strukturāli iedzīvotāju procentuālā attiecībā visā periodā lielāks īpatsvars ir sievietēm, taču to dinamika ir atšķirības, t.i., 2004. g. vīriešu bija 46,5%, 2001. gadā – 46,9% vai par 0,4% mazāk. Turpretim sievietes 2004. gadā veidoja 53,5% un 2001. gadā – 53,1%, vai pieaugums par 0,4%. Strukturējot pilsētu, lauku un lielpilsētu iedzīvotājus, vērojama lielpilsētu nozīme ekonomiskajā aprītē. Iedzīvotāju koncentrēšanās vērojama visā apskatāmajā periodā. Divpadsmit pilsētās iedzīvotāju skaita dinamika ir svārstīga: 17,0-17,7% robežās no kopējā reģiona iedzīvotāju skaita, pārējo daļu – 42,0-42,9% – veido lauku pašvaldību iedzīvotāji. Ja apskata 2004. gada vidējo iedzīvotāju blīvuma attiecību pret 2001. gadu gan reģionā kopumā, gan lielpilsētās, samazinājums procentuāli ir šāds: 3% – reģionā un 2,7% – lielpilsētās. Analizējot cilvēkresursus pēc darba spējas vecuma attiecīgajā periodā, arī vērojams samazināšanās process. To rāda 2004. gada attiecināšana pret 2001. gadu: iedzīvotāju skaits līdz darbaspējas vecumam samazinājies par 0,7%, darbaspējas vecumā – attiecīgi par 0,5% un virs darbaspējas vecuma – par 1,2%. Iedzīvotāju resursu mainīgā vide Latgales reģionā raksturo vispārējo ekonomisko situāciju Latgalē un valstī kopumā. Valstī realizējot denacionalizācijas un privatizācijas procesus, attīstījies privātais sektors. Cilvēkresursu samazināšanās iezīmes rāda, ka nav izmantots to

potenciāls, nav pilnvērtīgu izzināšanas un iekļaušanās pasākumu cilvēku ieinteresēšanai ekonomiskajās aktivitātēs jauktās tirgus ekonomikas sistēmā.

Pilotprojekts “Latgales attīstības plāns” ir pieskāries daļai no 1997. gada PHARE Nacionālās programmas. Vienā no uzdevumiem teikts, ka Latgale ir visvājāk attīstītais Latvijas reģions ar visaugstāko bezdarba līmeni un ekonomisko problēmu koncentrāciju. Latgales ekonomiskā attīstība ir lielā mērā atkarīga no Padomju laikā izveidotās struktūras; tās attīstības gaita būtiski atšķiras no Rīgas reģiona ekonomiskajām aktivitātēm. Latgalei ar tās nelielo apdzīvotības blīvumu un raksturīgo ainavu (pļavas, ganības, tūrumi mežu un ezeru ielokā) nepieciešams specifisks lauku attīstības politikas instruments, kas cilvēkiem dotu iespēju dzīvot labklājībā, kā arī saglabātu un uzlabotu vidi (LR EM ziņojums, 2000).

## **2. Darba resursu kvalitātes jēdziens** *Concept of the quality of labor resources*

Par kvalitāti sabiedrība runā jau tūkstošiem gadu pirms mūsu ēras. Senajā Ēģiptē tika radīta tā saucamā “Mīrušo grāmata”, kuru droši varam uzskatīt par pirmo kvalitātes sistēmu pasaulē. Šajā grāmatā bija iekļautas detalizētas instrukcijas vai, mūsdienu terminoloģijā runājot, procedūras, kuras rūpīgi izpildot, cilvēks sagatavoja savu dvēseli un ķermeni nāves dzīvei. Viduslaikos izstrādājuma kvalitāte kļuva par katra sevi cenoša amatnieka goda un cieņas jautājumu. Lai uzturētu augstu un pastāvīgu preču kvalitāti, amatnieki apvienojās apvienībās jeb tā sauktajās gildēs. Industriālā revolūcija iznīcināja daudzus sīkos amatniekus, kuri nespēja sacensties ar lielo manufaktūru un rūpnīcu saražoto preču apjomu un ražošanas tempiem. Lai nodrošinātu savas produkcijas kvalitāti, šo lielo ražotņu īpašniekiem nācās izstrādāt un ieviest jaunas vadības un darba organizācijas metodes, kurās aktīvi līdzdarbotos gan strādnieki, gan uzraugi, gan izejvielu piegādātāji.

Jēdziens “kvalitāte” ir daudzveidīgs un var izdalīt vairākas tā interpretācijas. Martin L.L. kvalitāti traktē kā atbilstību prasībām, noderību lietošanai, atbilstību patērētāju gaidām ar minimālām atšķirībām (Martin L.L., 1993.). Starptautiskās Standartizācijas organizācija (ISO, ISO 8402) kvalitātei dod relatīvu jēdzienu: tā ir objekta vai vienības (t.i., produkta) raksturlielumu

kopums, kas nosaka tā spēju atbilst noteiktajām un paredzamajām vajadzībām. Kvalitāte ir temats, kura nozīmība Rietumeiropā aizvien palielinās. Viena no kvalitātes principa priekšrocībām ir šī koncepta relatīvā atvērtība, tā jēga var mainīties un tai vajag mainīties līdz ar kontekstu. Pēc Otrā Pasaules kara Japāna pārstrādāja agrākos valsts politikas mērķus, tā vairs nekoncentrējās uz jaunu teritoriju iekarošanu, bet gan uz ekonomiska rakstura mērķu sasniegšanu. Vēsturiski, kad japāņu ražotās preces sāka plūst uz rietumu tirgiem, tās bija bēdīgi slavenas ar savu zemo kvalitāti. Lai izdzīvotu, nekas cits, kā uzlabot kvalitāti, neatlika. 80. gados Japānas ekonomikas atbalsta plāna ietvaros izstrādāti “kvalitātes guru”, vispārējie Japānas kvalitātes sistēmas principi, kas pašlaik ir “kvalitātes domāšanas” pamatā: uzņēmuma vadībai jāuzņemas atbildība par kvalitātes vadības sistēmas ieviešanu un tās prasību bezkompromisu ievērošanu; personālam visos uzņēmuma līmeņos jāapgūst kvalitātes vadības sistēmas pamatprincipi; kvalitātes uzlabošana uzskatāma par nepārtrauktu procesu; jānodrošina personāla dalība kvalitātes uzlabošanas procesā.

Pašlaik “kvalitātes domāšana” koncentrējas uz jaunu kvalitātes koncepcijas izpratni. Vēl pavisam nesen centieni nodrošināt kvalitāti tika koncentrēti tikai uz produkta kvalitātes nodrošināšanu (Torgans K., 1994), taču tagad ražotāji ir sapratuši, ka ar preces kvalitāti vien nepietiek. Jebkura uzņēmuma darbinieka attieksme pret klientu un pret darbu ir kvalitātes komponents. Mūsdienās uzņēmējam jārēķinās ar šo acīmredzamo faktu un katrā savā solī jāskatās potenciāls savai un darba resursu kvalitātei.

Kvalitatīvs darba resursu devums ir Latvijas sekmīgas attīstības pamats un demokrātijas saglabāšanas garants. Radoši, izglītoti, pārliecināti, entuziasma pilni, vaļsirdīgi un veseli cilvēki ļauj daudz efektīvāk un saprātīgāk izmantot dabas resursus un ģeogrāfisko stāvokli, veidot infrastruktūru, ekonomiku, organizēt uzņēmējdarbības vidi. Šādi cilvēki ir gatavi uzņemties pārdomātu risku, kas savukārt ceļ viņu dzīves līmeni. Pievienošanās ES un NATO izraisa un stimulē nepieciešamību būtiski celt Latvijas cilvēkresursu un darba kvalitāti. ANO attīstības programmas Latvijas „Pārskata par tautas attīstību 1998. gadā” socioloģisko aptauju rezultāti rāda, ka Latvijas iedzīvotāji darba nozīmi savā dzīvē vērtē augstāk nekā Rietumu respondenti (ANAP, 1998).

Apkopojot vispāratzītās dogmas, autore darba resursu kvalitāti definē **kā to raksturlielumu (pazīmju un īpašību) kopumu, kas nosaka tā spēju atbilst noteiktajām un paredzamajām tīrgus un tā dalībnieku vajadzībām konkrētā laikā un vietā.**

Mainoties ekonomiskai sistēmai, iedzīvotāju paaudzēm, izvērtoties integrācijai Latvijā un it īpaši Latgales reģionā, liela nozīme ir uzņēmējdarbības vides elementam jeb ražošanas faktoram „darba resursi”. Lai darba tirgū piedāvājums tiktu piesaistīts atbilstoši tā pieprasījumam ar attiecīgu kvalitāti, pētot darba resursus un analizējot to kvalitātes nodrošināšanas instrumentus, jāizprot, kas veido darba resursu potenciālu un kādi faktori kavē sekmīgu kvalitātes nodrošinājumu šajā procesā Latgales reģionā.

### **3. Latgales reģiona darba resursu raksturojums**

#### ***Characterization of labor resources in the region of Latgale***

Darba resursi ir viens no ražošanas resursu paveidiem, kurš būtiski atšķiras no citiem ar to, ka to veido cilvēka darbs. Darbu var raksturot kā cilvēka mērķtiecīgu darbību, ar kuras palīdzību viņš pārveido dabu un citus ieguldījumus un izmanto to savu un citu cilvēku vajadzību apmierināšanai.

Darba resursu sastāvdaļas ir darbs un uzņēmējspējas. *Darbs* – cilvēka jebkāda intelektuāla vai fiziska darbība, kas tiek mērķtiecīgi veikta, lai ražotu labumus un pakalpojumus jeb tautsaimniecībā kopumā nodarbinātie. *Uzņēmējspējas* – uzņēmējdarbības resurss (faktors) ir spēja koordinēt un kombinēt ražošanas pārējos faktorus (zemi, kapitālu, darbu), lai nodrošinātu labumu un pakalpojumu ražošanu jeb uzņēmēji, kas uzņemas šo darbību, lai veidotu peļņu nesošu uzņēmējdarbību un riskē.

Latgalē viens no darba resursu raksturojošiem rādītājiem ir ekonomiski aktīvo iedzīvotāju skaits reģionā, t.i., cilvēkresursu daudzums, kas piedāvā savu darbu materiālo vērtību ražošanai vai pakalpojumu sniegšanai. Rādītājs apskatāmā laika dinamikā ir svārstīgs. Otrajā tabulā redzams, ka 2000. gadā ekonomiski aktīvie iedzīvotāji ir fiksēti 162 800 cilvēku, bet 2001. gadā ir pieaugums līdz 165 900 cilvēku; sekojoši 2002. gadā – samazinājums līdz 164 300 cilvēku, 2003. gadā – pieaugums līdz 165 300 cilvēku un 2004. gadā

2. tabula / Table 2

**Latgales reģiona darba resursu raksturojums 2000.-2004. g. (vidēji)**  
***Characterization of labor resources in the region of Latgale in 2000-2004***  
***(annual on average)***

| Rādītāji<br><i>Indices</i>                                                                                                        | Gadi<br><i>Years</i> |         |         |         |         | 2004 %<br>pret / to<br>2001 |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|---------|---------|---------|---------|-----------------------------|
|                                                                                                                                   | 2000                 | 2001    | 2002    | 2003    | 2004    |                             |
| Ekonomiski aktīvo iedzīvotāju skaits /<br><i>Number of economically active people</i>                                             | 162 800              | 165 900 | 164 300 | 165 300 | 165 000 | 99,5                        |
| no reģiona iedzīvotāju<br>kopskaita / <i>of region's total population</i><br>[%]                                                  | 42,3                 | 43,4    | 43,5    | 44,1    | 44,3    | 102.1                       |
| Nodarbināto skaits<br><i>Number of working population</i>                                                                         | 87 000               | 128 000 | 91 000  | 125 000 | 130 000 | 101,6                       |
| no ekonomiski aktīvo iedzīvotāju<br>kopskaita / <i>of economically active people</i><br>[%]                                       | 53,4                 | 77,2    | 55,4    | 75,6    | 78,8    | 102.1                       |
| t.sk. no ekonomiski aktīvajiem<br>lielpilsētās / <i>of which economically</i><br><i>active people in cities</i> [%]               | 28,6                 | 32,9    | 31,7    | 31,9    | 32,9    | 100.0                       |
| Darba meklētāji / <i>Jobseekers</i>                                                                                               | 19 500               | 19 000  | 17 500  | 16 700  | 18 000  | 94,7                        |
| Bezdarba līmenis<br><i>Unemployment rate</i> [%]                                                                                  | 18,4                 | 18,1    | 22,4    | 23,4    | 22,9    | 126.5                       |
| t.sk. lielpilsētās / <i>of which in cities</i><br>[%]                                                                             | 10,9                 | 9,8     | 12,0    | 16,9    | 12,8    | 130.6                       |
| Uzņēmumu skaits uz 1000<br>iedzīvotājiem / <i>Number of enterprises</i><br><i>per 1000 people</i><br>[uzņēmumi/enterprises]:      | 3 376                | 3 474   | 3 599   | 3 690   | 3 285   | 94,6                        |
| t.sk. no tiem ar nodarbināto skaitu ≤ 49<br><i>of which with the number of employed</i><br><i>≤ 49</i> [uzņēmumi/enterprises]     | 3 190                | 3 294   | 3 426   | 3 520   | 3 120   | 94,7                        |
| no tiem ar nodarbināto skaitu 50-<br>249 / <i>of which with the number of</i><br><i>employed 50-249</i><br>[uzņēmumi/enterprises] | 151                  | 149     | 148     | 147     | 144     | 96,6                        |
| no tiem ar nodarbināto skaitu ≥ 250<br><i>of which with the number of employed</i><br><i>≥ 250</i> [uzņēmumi/enterprises]         | 35                   | 31      | 25      | 23      | 21      | 67,7                        |

**Avots:** autores pētījums pēc CSP datiem, EM statistikas datiem.

– samazinājums līdz 165 000 cilvēku. Procentuālā attiecība „2004. gads pret 2001. gadu” attiecīgi veido samazinājumu par 0,5%. No reģiona iedzīvotāju kopskaita ekonomiski aktīvo iedzīvotāju īpatsvars svārstās intervālā 42,3-44,3%. Ekonomiski aktīvie iedzīvotāji norāda uz darbaspēka potenciālu. Zemais procents norāda uz pilnīgu iedzīvotāju resursu neiesaistīšanos uzņēmējdarbības vidē, ko var izskaidrot ar iedzīvotāju migrāciju reģionu robežās. Nodarbinātībai raksturīgs pieaugums visa perioda laikā. Attiecinot 2004. gadu pret 2001. gadu, vērojams pieaugums par 1,6%. Pēc

CSP datiem ranžējot nodarbinātības statusa kategorijas, 2004. gadā darba ņēmēji bija 85,4% no ekonomiski aktīvo iedzīvotāju kopskaita, darba devēji – 4,3%, pašnodarbinātie – 6,7%, darba meklētāji – 1,1%, ģimenes uzņēmumos strādājošie neapmaksātie ģimenes locekļi un radnieki – 2,5% (CSP dati). Nodarbināto īpatsvars ekonomiski aktīvo iedzīvotāju kopskaitā rāda nodarbinātības pieaugumu iepriekš minētajās nodarbinātības kategorijās, kurš visā periodā atrodas intervāla 53,4-78,8% robežās. Tas vērtējams pozitīvi, jo kvantitatīvi palielinās cilvēkresursu izmantošana. Tas notiek uz divpadsmit pilsētu un lauku teritoriju

rēķina, jo lielpilsētās šī īpatsvara mainība nav būtiska, ņemot vērā abu pilsētu iedzīvotāju skaita pārsvaru pār pārējām reģiona administratīvajām teritorijām. Darba meklētāju procentuālās attiecības samazināšanās 2004. gadā pret 2001. gadu par 5,3% norāda uz tendenci cilvēkresursus izmantot kā darba resursus. Tanī pat laikā reģiona bezdarba līmenis ir mainīgs salīdzinājumā ar valsts vidējo. Pēdējo gadu dinamika ir šāda: 2000. gads – 18,4%, 2001. gads – 18,1% pret valsts vidējo (7,7% no ekonomiski aktīvajiem iedzīvotājiem), 2002. g. – 22,4% pret 8,5%, 2003. g. – 23,4% pret 8,6%, 2004. g. – 22,9% pret 8,1% (CSP dati). Latgalē ir visaugstākais bezdarba līmenis Latvijā. Oficiāli reģistrētais bezdarba līmenis pēc Nodarbinātības valsts dienesta datiem bija vairāk nekā divas reizes augstāks par vidējo Latvijā. Visaugstākais reģistrētais bezdarba līmenis – vairāk nekā 20% no ekonomiski aktīvajiem iedzīvotājiem – ir Rēzeknes, Preiļu, Balvu un Krāslavas rajonos. Latgalē vairāk nekā citos reģionos iedzīvotāji cenšas oficiāli pierēģistrēties kā bezdarbnieki, lai saņemtu bezdarbnieka pabalstu, kas daudzos gadījumos ir vienīgais ģimenes ienākumu avots. Tādēļ ticamība par pašreizējo situāciju ir pieņemama. Raksturojot darba resursu potenciālu, darbu jeb darbaspēku skatīt nošķirti no uzņēmējspējām nevar. Viens no uzņēmējspēju rādītājiem ir uzņēmumu skaits uz 1000 iedzīvotājiem. Reģionā šis rādītājs pētījuma laikā nav konstants lielums; nodarbināto skaits uzņēmumos nosaka arī uzņēmējspēju robežas. Ja raksturo perioda dinamiku šim rādītājam kopumā, vērojamas svārstības: ja pirmie 4 gadi ir

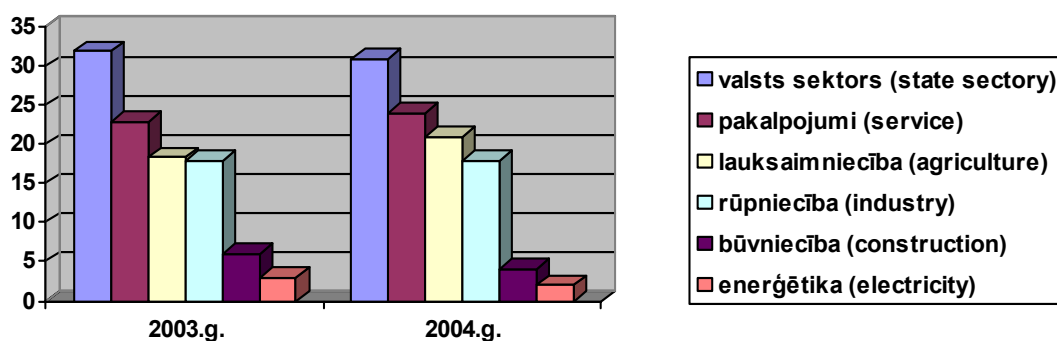
uzņēmumu skaita pieaugums uz 1000 iedzīvotājiem, tad pēdējā gadā ir samazinājums, kā arī 2004. gada attiecībai pret 2001. gadu ir 5,4% kritums. Strukturējot pēc nodarbināto skaita, vērojams, ka pie lielāka nodarbināto skaita uzņēmumu skaits uz 1000 iedzīvotājiem samazinās. Piemēram, 2004. gada attiecība pret 2001. gadu ar nodarbināto skaitu līdz 49 cilvēkiem samazinājusies par 6,3%, ar nodarbināto skaitu no 50 līdz 249 – attiecīgi par 3,4%, ar nodarbināto skaitu virs 250 – attiecīgi par 2,3%. Pirmajā attēlā ir redzams, kā sadalās nodarbināto īpatsvars tautsaimniecības sektoros Latgales reģionā.

Valsts sektors ir galvenais darba devējs Latgalē ar aptuveni 40 000 darba vietu vai gandrīz 31% no pēdējo gadu nodarbinātības līmeņa, tad seko tirgus pakalpojumu sektors ar 31 000 (24%) nodarbināto, lauksaimniecība – 27 000 (21%), rūpniecība – 23 000 vai 18%, būvniecība – 5 000 vai 4% un enerģētika – 1300 vai 1% u.c. (LR EK dati). Uzņēmēji nav aktīvi jaunu netradicionālu uzņēmējdarbības veidu ieviešanā, nepaplašinās, savas uzņēmējdarbības veicināšanai pasīvi izmanto īpaši atbalstāmo reģionu statusu, kas ir piešķirts lielai daļai teritorijas.

#### 4. Darba resursu kvalitāti negatīvi ietekmējošie faktori

##### *Factors negatively affecting the quality of labor resources*

Lai varētu runāt par darba resursu kvalitāti, tās pilnveidošanas risinājumu meklēšanas, jāidentificē ekonomikas kopīgās problēmas ne tikai valsts līmenī. Jāatzīst fakts, ka darba resursi kā



Avots: autores veidots pēc CSP un EM statistikas datiem.

#### 1. att. Nodarbināto īpatsvars tautsaimniecības sektoros Latgales reģionā 2003./2004. g. (%)

*Fig. 1 The proportion of working population in sectors of national economy in Latgale region in 2003/2004 (%)*

viens no ekonomikas subjektiem nosaka pārējo ekonomikas atveseļošanas gaitu. Darba resursu „taustāmā bagātība” ir tādas kā īpašības, prasmes, talanti un unikālas īpatnības, kas neparādās nekādās bilancēs skaitļu veidā. Šodien problēmas, t.i., šķēršļus, uzņēmējdarbības izaugsmei var saistīt ar nepietiekamu prasmi veidot, vadīt un kārtot darījumus vai pieņemt lēmumus. Tikai noskaidrojot darba resursu kvalitāti ietekmējošos faktorus, iespējams prognozēt un papildināt problēmas risinājumu elastīgai darba resursu izmantošanai sekmīgas uzņēmējdarbības vides izveidē. Autore ir izvēlējusies ekspertaptaujas metodi, lai noskaidrotu Latgales reģiona situāciju šajā jautājumā. Trīs ekspertu (NVA Balvu filiāles vadītāja S. Kindzule, SIA ”Buts” Rēzeknes nodaļas direktors A. Abrickis, VOAMD Ludzas rajona pārvaldes darbiniece R. Kozlovskā) vērtējumi ir devuši precīzu uzskaitījumu un skaidrojumu darba resursu kvalitāti negatīvi ietekmējošajiem faktoriem Latgalē.

■ **Reģionālais un ģeopolitiskais stāvoklis** – pierobežas rajonu ekonomiskās un politiskās nenoteiktības ar Austrumu kaimiņiem, nodokļu pārdales un attāluma no valsts galvaspilsētas negatīvā ietekme uz uzņēmējspēju piesaisti.

■ **Darba resursu teritoriālais pārklājums un ierobežotie iztikas līdzekļi** liek lielākai daļai cilvēku piespiedu kārtā īslaicīgi stāties darba attiecībās ar darba devējiem uz darba ņēmējiem neizdevīgiem darba samaksas, darba laika un vietas nosacījumiem (zema darba samaksa, neizdevīga darba laika sadale un virsstundu darbs, darba vietas attālums), lai nodrošinātu ģimenēm iztiku. Darba vietu piedāvājums centrēts pilsētās un to pašvaldību teritorijās, kur ir labvēlīga infrastruktūra ar tranzītmācību.

■ **Darba resursu vecums** – jauni cilvēki vecumā no 15-19 līdz 20-24 gadiem darba tirgū saskaras ar tādiem šķēršļiem kā neesoša vai maza darba pieredze un nepietiekams vecums; cilvēki, kas vecāki par 45 gadiem, īpaši lauku rajonos, pasīvāk iekļaujas jauno ekonomisko modeļu apgūšanā, kas prasa pārkvalificēšanos.

■ **Darba resursu zema un neatbilstoša izglītība** – cilvēki ar vidējo izglītību ir bez noteiktas specialitātes, profesijas. Šodien daudzās tautsaimniecības nozarēs ir pieprasīti augstas kvalifikācijas speciālisti, darba tirgū pastāv augsta konkurence, dažādas iedzīvotāju kategorijas neaktīvi iesaistās pārkvalificēšanā.

■ **Darba resursu vienkāršo profesiju lielais potenciāls** – daļa iedzīvotāju savu profesiju ir apguvuši pirms 90. gadiem. Darba tirgū šodien ar vien zemāks pieprasījuma zemas kvalitātes darbam. Centralizēti plānotās ekonomikas apstākļos iegūtās pieredzes darba disciplīnas jautājumos (neprasme pieņemt patstāvīgus lēmumus, uzņemties atbildību) un citas metodikas nedarbojas. 60.-80.gadu iegūto vienkāršo profesiju kvalifikācijas neatbilst šodienas uzņēmējdarbības personāla standartu prasībām.

■ **Valodas zināšanas trūkums** – Latgales reģionam īpaši raksturīgs multinacionālisms, kas ietekmē darba resursu konkurētspēju darba tirgū valsts valodas zināšanu līmenī un brīvu citu svešvalodu pielietošanu darba vajadzībām.

■ **Sieviešu darba resursu piedāvājums un izmantošana smagos fiziskos darbos** – Latgalē šodien regulāra parādība ir sieviešu darbs, kas tiek mazāk apmaksāts, vairums smagu fizisko darbu strādājošo (lauksaimniecībā, mežsaimniecībā un to pārstrādes uzņēmumos) vīriešu ir izbraukuši darba meklējumos.

■ **Cilvēka pasīvā līdzdalība** – iedzīvotāju neizlēmība, neuzdrošināšanās iesaistīties sabiedrības, sociālās un kultūras, politiskajā un ekonomiskajā apritē; cilvēka vēlme iet vieglāko ceļu, bailes riskēt, kā arī nogaidīšana, nolaidība, neziņa un neticība neļauj pilnvērtīgi izmantot savu iekšējo personīgo būtību un piedalīties darba tirgū.

## **Secinājumi, priekšlikumi, ieteikumi**

### ***Conclusions, proposals, suggestions***

#### *Pētījuma laikā izveidojušies secinājumi.*

■ Ekonomiski aktīvo iedzīvotāju skaits, kuri piedāvā savu darbu un uzņēmējspējas Latgales reģionā, ir svārstīgs. Tas saistīts ar iedzīvotāju migrāciju.

■ Darba resursu kvalitāte ir raksturlielumu (pazīmju un īpašību) kopums, kas nosaka tā spēju atbilst noteiktajām un paredzamajām tirgus un tā dalībnieku vajadzībām konkrētā laikā un vietā.

■ Raksturīgākie darba resursu kvalitāti negatīvi ietekmējošie Latgales reģionā faktori ir zema un neatbilstoša izglītība, vienkāršo profesiju lielais potenciāls, ierobežotie iztikas līdzekļi un vecums.

#### *Priekšlikumi un ieteikumi.*

■ Darba resursu ietekmējošo faktoru pilnvērtīgai un kvalitatīvai konstatēšanai

nepieciešams izpētīt uzņēmējdarbības vidi un tās attīstības tendences Latgales reģionā.

■ Darba resursu kvalitatīvai raksturošanai nepieciešama detalizēta analīze par šī resursa atjaunošanos, pārvietošanos, pilnveidošanos, nosakot to iekļaušanās kavējošos un stimulējošos cēloņus un likumsakarības ekonomiskajās aktivitātēs.

■ Apzināt valsts un ES rekomendējošās normas un regulas darba resursu kvalitātes pilnveidošanā valsts un reģionālā līmenī.

### **Izmantotās informācijas un literatūras avotu saraksts**

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## **The Change of Developmental Strategy of West Pomeranian Region in 2007 - 2015**

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### ***Abstract***

The aim of this elaboration is to present the changes of developmental strategy in West Pomeranian region, relating to the development of rural areas and agriculture. The paper has a theoretical character. The chosen, of such particular research subject is regarded to the necessity of verification of existing developmental strategy for 2004 – 2006, and preparation of new developmental strategy for 2007 – 2015. The author is one of the experts involved in estimating of the strategy preparation. The National Plan of Development (NPR) is the superior plan of socio – economic development, taking into account the regional, sectoral and horizontal strategies of development. It is the complex document and the base for UE financial support negotiating, regarding to the schedule of UE budget programming and the cohesion policy. The studies on the National Plan of Development for 2007 – 2013 are at the last stage at this moment.

**Key words:** strategy, development, west Pomeranian, EU.

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### **Introduction**

The economic development as well as the change of social setting, both in the country and in the region, and also two years of membership in European Union, requires the estimation, the verification and the actualization of developmental strategies. This concerns the strategy on the national level (the National Plan of Development) as well as the strategy on regional level (the Strategy of West Pomeranian Development).

The National Plan of Development (NPR) is the superior plan of socio – economic development, taking into account the regional, sectoral and horizontal strategies of development. It is the complex document and the base for UE financial support negotiating, regarding to the schedule of UE budget programming and the cohesion policy. The studies on the National Plan of Development for 2007 – 2013 are at the last stage at this moment.

Simultaneously, NPR is the national element of the Lisbon Strategy realization. It means that the priorities of NPR will be equal to the main priorities of the Lisbon Strategy.

Foundations of NPR define different interactions between strategic programming on the nationwide level (integrated, horizontal, and sectoral) and strategic planning on the regional level.

This means that the records of actualized strategies of development in regions will be regarding to NPR strategy. At the same time, foundation of NPR for 2007 – 2013, should be considered in regional documents. Such a state decides about existence of feedback between NPR and regional strategies. On the one hand, existing foundations of NPR characterize developmental priorities for the regional strategies; on the other hand, the regional strategies will be described in the final shape of NPR.

### **Aim and research methods**

The aim of this elaboration is to present the changes of developmental strategy in West Pomeranian region, relating to the development of rural areas and agriculture. The chosen, of such particular research subject is regarded to the necessity of verification of existing developmental strategy for 2004 – 2006, and preparation of new developmental strategy for 2007 – 2015. The author is one of the experts involved in estimating of the strategy preparation.

The research was conducted in 2005 and concerned theoretical studies of the strategy of regional development. The basic research method, used in the paper was the monographic method, depending on sources analysis. Data and materials used in the paper were gathered from Main Statistical Office (GUS) and from studies prepared by councils and experts.

## Research results

The general judgment of region economic shape for the last four years (from the moment of strategy foundation) letting us to indicate the following critical problems of region development in next future:

- The region does not use its advantages resulting from geographical placement sufficiently;
- The economy of region characterizes with low economic growth (99,2% of Polish GDP average level);
- The sectored structure of economy undergoes negative changes which results with regress of traditional economic functions connected with sea economy;
- During the years 1999 – 2002, economy of region was in the stage of strong recession - the fall of sold industrial production and building;
- The serious macroeconomic problem is the very high level of unemployment (26,8% at the end of September 2004);
- The level of enterprises bankruptcy in region is considerably higher than national average;
- A large developmental disproportion in spatial allocation is very characteristic for region economy.

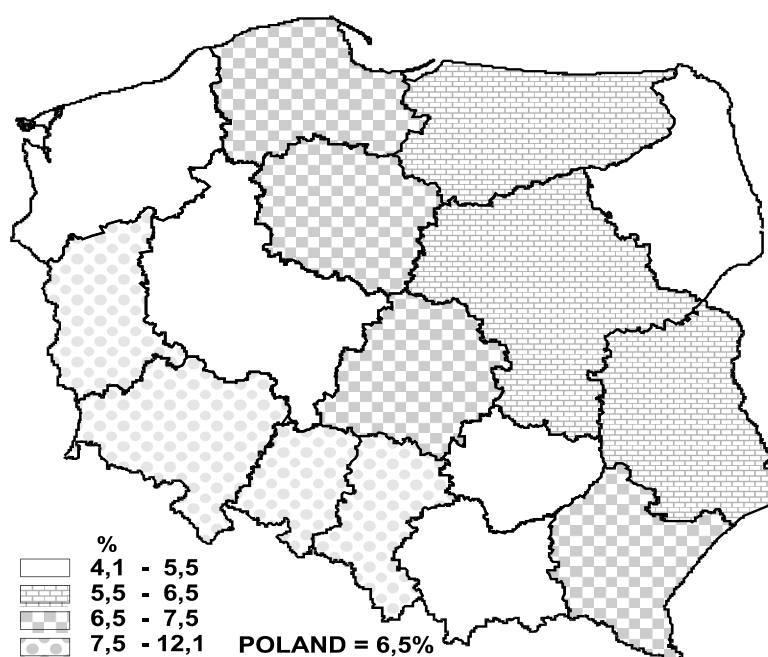
The decreasing state of enterprises economic in region is very serious condition of region development. Basing on the newest statistic data about dynamic of industrial production growth, it is possible to conclude that importance of region production is dropping in Poland. With dynamics of production growth below average level in Poland, the region delivers about 3% industrial production of Poland and only 3,5% the production of building sector.

The economic efficiency of enterprises in region should be also negatively estimated. The rentability is one of the lowest in Poland and it hasn't change for the last three years since 2003 (Fig.1).

### Spatial – economic structure of region

The very important component of internal condition that indicate on region economic potential is estimation of sector economy structure for pointing to the target spatial – economic structure of region.

Opening of the region economy to European and global competition diametrically changes the economic scenery of region. The sectors of economy characterizing with high degree of competitiveness concentration are losing (mainly sea trades and shipbuilding industry).



Source: *Rocznik statystyczny województw 2003, GUS.*

Fig. 1 The level of rentability in Poland in 2003.

This phenomenon has a direct influence on this has on shrivel of traditional economic region functions connected to sea economy and at once becomes stimulus of economic structure redefining.

Despite the significant fall of meaning of existing economic functions, the strategy doesn't redefining the key competences of the region. The traditional association the West Pomeranian region with the sea trade, in the moment of a deep world crisis and unfavorable structure of job costs in relation to Korean enterprises, it can not make up premises on which strategy should be changed in future (Gzresiuk A., Zelek A., 2004).

Having above as a background, it is worth to take into consideration, the conception of three ways strategy for development of region economy. Such conception links to aims of NPR in range of regions economic competitiveness growth, using advantages and internal specification. Fig. 2 presents an idea of three ways strategy.

Taking into account the diagnosis of present economic shape of region together with requirements of new market economy and the challenges of future, it is proposed to acquire two stages of West Pomeranian strategy of development:

■ **Period I** - mainly focusing on social and economic development disproportion leveling in region. The main aim in this period is to accumulate capital which in second stage will permit on initiation modern technologies and services.

■ **Period II** – the development in direction of modern technologies – this proposal permits on activation of community on a local level, and it concerns the possibility of undertaking works on regional level, without expectation on national support.

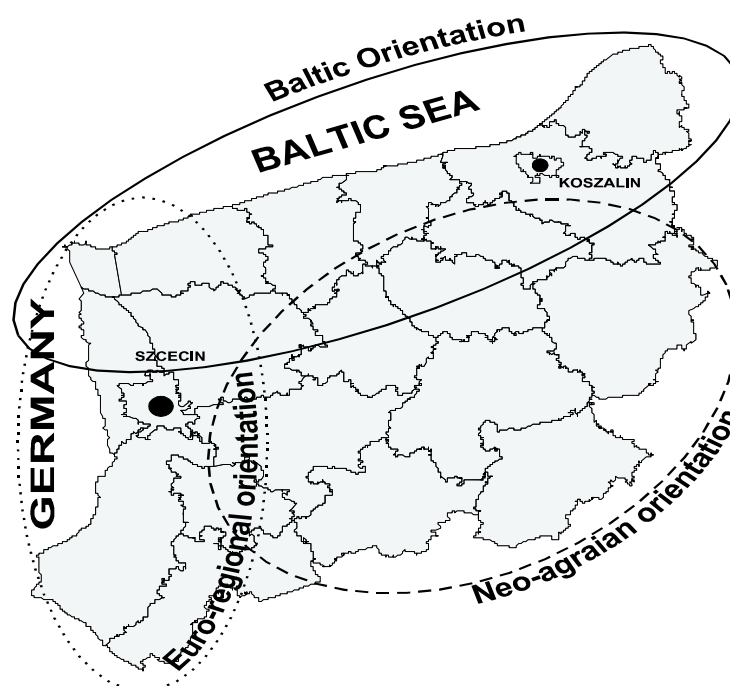
The idea of three ways strategy for region development in West Pomeranian gathers future key competences in three areas:

- The Baltic orientation,
- The neo-agrarian orientation,
- The Euro-regional orientation.

The idea of the strategy is that there is one main strategy divided into three parts according to the spatial placement in region.

#### **The Euro-regional orientation as the functions of services outsourcing**

The location of West Pomeranian region on Polish – German (Fig. 3) borderland creates the possibility of development of Euro-regional co-



Source: Own study basing on Założeń do aktualizacji Strategii woj. Zachodniopomorskiego do roku 2015, Szczecin 2005.

Fig. 2 The idea of three ways development strategy for West Pomeranian region economy.



Source: Own study 2004.

Fig. 3 Euroregion Pomerania

operation in a wider scale, than it occurs nowadays. At present, Euroregion Pomerania (it is composed from Poland, Germany and Sweden) creates the wide possibilities of far more development of co-operation and use of the human potential in region. The satisfying the needs of Berlin, in range of food supply, industrial and human may be an example.

Next economic functions may be:

- The service functions, connected to lower cost of work in Poland than in German (the difference in earnings over 4 times). Thought, no one should concentrate on satisfying basic services (dry-cleaning, markets, shops) but also make the possibility of creating modern service sections (call centers, computer service etc.).

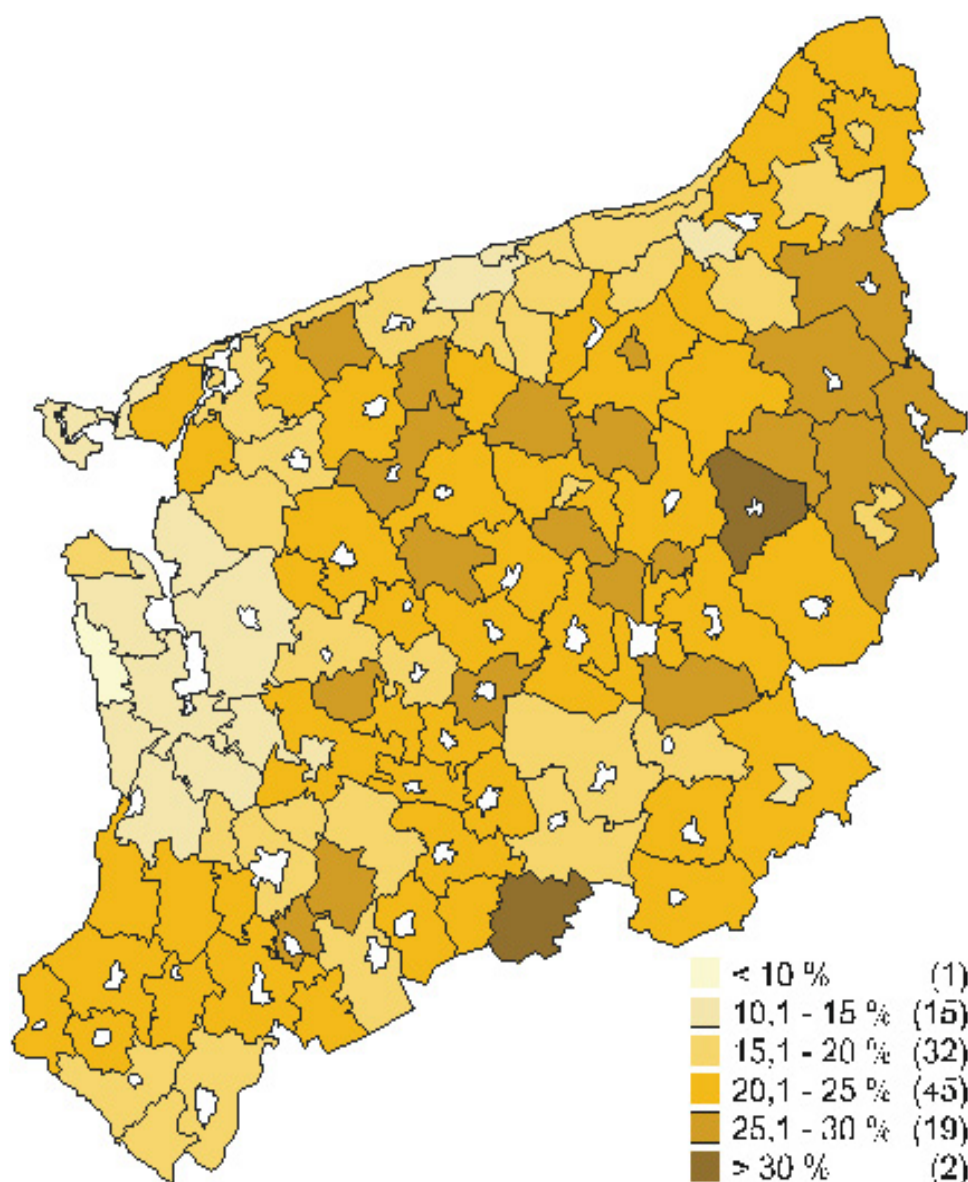
- The transport and logistic function - with regard to geographical location (on route of international roads from East to West as well as the main international roads from South Europe to Scandinavia). Improvement and modernization of road infrastructure as soon as it is possible is an essential matter, which should make up one of the main priorities of region development.

- The function of the border trade, which changes its character, what may be caused by decreasing number of markets (from 1999 the number of markets lower about 50%), transfer costumers to the trade centers in Szczecin and also by decreasing price differences between Poland and German.

#### **The neo-agrarian orientation as food and agro-tourism functions**

The central and south parts of West Pomeranian region are first of all the rural areas, with agricultural character and without developed industry. It is mainly clean area with highly ecological value. There are national parks and landscape parks as well as areas covered by Nature 2000. This area creates the possibility of food and agro-tourism function.

It should be indicating that characteristic for this area is high level of structural unemployment (Fig.4). This is also the most economically backward region, with typically agricultural character, but moreover with high landscape values.



Source: Carried out research in 2004.

**Fig. 4 The level of unemployment in West Pomeranian Region, at the end of 2004**

The development of agro-tourism can make up the basic developmental function of this area. So, support for farmers who are modernizing farms and for councils in development of infrastructure, seems to be essentially equal. Beside informative and promotion support, economic activation of this region should foresee wide financial support for small enterprises.

The diagnosis of economic situation allows for following conclusions about condition for development of agriculture in region:

- The farmers invest, enlarging their farms area and modernizing objects as well as they make purchases of the modern high-effi-

ciency machines. These facts testify about growth of agricultural farms competitiveness. It is estimated, that during the last 4-5 years to agriculture in West Pomeranian region, flow more than 500 million PLN from different sources (mostly preferential credits).

- At present, the most important problem for agricultural sector is to prepare and initiate all instruments of CAP support, including Plan of Rural Areas Development and Sectoral Operating Plan "The restructuring and modernization of food sector as well as development of rural areas" (Założenia do aktualizacji..., Szczecin 2005).

### **Baltic Orientation as tourism functions**

The basic developmental functions of seaside area as well as area of lake districts are development of tourism function. West Pomeranian region possesses 19% of national hotel base but almost 85% of all hotels in region are at the seaside. The lake districts are the unused area, with large potential sightseeing (only 6,7% of region) (Strategia Rozwoju ... do 2015, Szczecin 2005). The outline 5 shows the potential of tourism in region.

The development of tourism function in these areas bumps into three, the most important barriers:

- Seasonal demand, influencing on economic form of tourism enterprises. This is connected with high level of prices in period of intensive demand and the businessmen's relatively weak investment because of the short season. Carried out research results, that the season at the seaside lasts only 6 weeks (during last 10 years it was shortened for 2 weeks).

- The standard of tourism base is relatively low in comparison to high prices.

- Lack of complex plan of working order of sea coast and Szczecin Bay for growing needs of the sea yachting. The standard of services is exceptionally low. The sea yachting in region of Dąbie Lake and Szczecin Bay is marginal, and the tourism base comes from 70 of last century (not modernized from this time). In sphere of sea yachting needs of reorganization and investment seem particularly urgent with attention on well developed sphere of these services at German side.

At present, the most preferred form of tourism (active, qualified and rural) requires investing in sphere of tourism infrastructure as well as solid professional promotion (Założenia do aktualizacji ... 2005, Szczecin 2005). Initiative in aim of tourism season extension seems very essential at this moment and should be directed in following segments:

- Large growing potential of stays by German customers in sphere of sanatorium, during dull-seasons (mainly in April, May, June, September and October). Attractiveness of this costum-

ers results first of all from higher purchaser's strength (than traditional customers from Poland in peak summer season) as well as lower sensibility on weather hesitation.

- The enterprises and institutions interested in the organization of trainings, seminars and integrating meeting.

### **Conclusions**

Taking into conclusion, it is proposed to acquire two stages of West Pomeranian strategy of development: The first period – mainly focusing on social and economic development disproportion leveling in region. The main aim in this period is to accumulate capital which in second stage will permit on initiation modern technologies and services. The second period – the development in direction of modern technologies – this proposal permits on activation of community on a local level, and it concerns the possibility of undertaking works on regional level, without expectation on national support. The development of regions' economic should be focused on the three way development strategy which seems to be the only one proper idea of region development at this moment. On the other hand influence of Szczecin agglomeration on nearby rural areas should also be concerned.

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## **Success and failure factors in process of formulating and implementing local development strategy on rural areas in West Pomeranian voivodship**

*Mgr. Aleksandra GNIOT,*

**Key words:** local development, strategy, rural areas.

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System reform in Poland in early nineties wielded enormous influence on socio economic development not only for regions but also for counties and communities. Agriculture in Poland is still characterized by constant process of ownership, structural and economic changes. The most important ones were those happening on a labor market, such as the appearance of unemployment. Another interesting process was the change of property structure from public to a private sector as a result of privatization. Foreign investments were also having a big influence on development.

The Polish Local Government Reorganization that took place on the first of January 1999 implemented three step territory structure. Apart from voivodships<sup>1</sup> and existing since 1990 communities<sup>2</sup>; new counties<sup>3</sup> came into existence. The main goal of this reform was to create self-government, to streamline local authorities' actions and to bring them closer to the local problems and citizens. Therefore, the number of voivodships was decreased from 49 to 16 units. Communes and counties have now more power to decide for themselves and also more financial resources. The 5<sup>th</sup> biggest out of the 16 newly formed voivodships is the West Pomeranian (it's area consists of 7,3% of Poland) which is a subject of a following survey.

This presentation is based on the research done in 2004. The purpose of this estimation was to get to know the opinion of family farmers, entrepreneurs and local governors on factors of success in process of programming and implementing local development strategy. The other goal was to get the idea of material status and mental potential by

conducting personal interviews. The research was conducted in the province of West Pomeranian. It concerned 200 farmers, 150 entrepreneurs- whose activity is located in rural areas and small towns, 70 agro- tourist farms and 30 local council's offices. Based on analyses of local development strategies of chosen communes in Western Pomeranian voivodship and on statistic data from government's reports, the following survey describes current state of agricultural holdings and situation in agriculture; it was compared to other voivodships to indicate priorities for strategy.

The greatest asset of province is a cross- border location; almost 30% of respondents declare benefiting from living nearby the border, almost 90% admit being affected by the site. The Voivodship has 184,9km of sea frontier to the north and 186,6km of border with Germany to the west, a border which since joining EU on 1<sup>st</sup> of may 2004 is much easier to cross. The accessibility to voivodship is easy through it's 22 border crossing of all kinds: 8 sea borders, 9 land borders, 3 river borders, 1 airport border. It is therefore a crossing point of the most important continental routes between Scandinavia and Southern Europe and between Western Europe and the Baltic countries. Although the area (22 902km<sup>2</sup>) of Westpomeranian Region is in 48,7% agricultural land and in 35,4% covered by forest and with hundreds of post- glacial lakes, the business conditions and standards of living differ among voivodship. For this reason, while researching, the region was divided into three parts (shown on the map picture 1)<sup>4</sup>;

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<sup>1</sup> Voivodship (Polish- Województwo) corresponds to level 2 of NUTS classification

<sup>2</sup> Community ( Polish-Gmina) is a main subject of administrative territorial division of Poland, it corresponds to level 5 of NUTS classification.

<sup>3</sup> County (Polish: Powiat) corresponds to level 4 of NUTS classification it consist of certain amount of communities

<sup>4</sup> Założenia aktualizacji „Strategii Rozwoju Województwa Zachodniopomorskiego do roku 2015” Urząd Województwa Zachodniopomorskiego, Szczecin listopad 2004.

- the “Euroregional direction”- where examined subjects could benefit from integration process and the lower labor cost at the most; for example by launching a service firms (such as hairdresser, car mechanic, medical service, logistic also outsourcing of informatics services and call centers). Those activities are based on growing demand from German consumers;

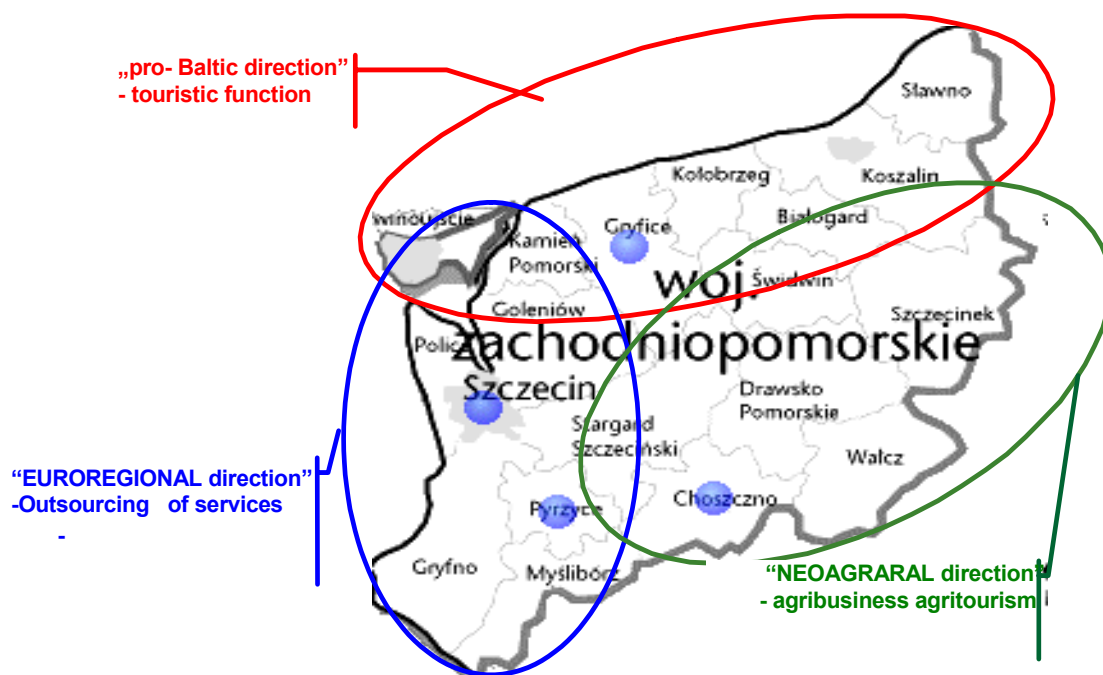
- the “pro-Baltic direction”- affected by the coast line which reflects in tourist function, fishing and shipbuilding industry. The Szczecin-Świnoujście seaport reloads over half of the cargo for the entire Polish sea trade, and over 80% of transfer shipping. The entire region also leads in seagoing passenger transport, with 85,5% of the national traffic;

- the “Neoagrar direction” – where strategy should be concentrated on increasing efficiency of agriculture. The food processing potential is mostly not adapted to the region’s agricultural potential for example: there is unfulfilled demand on potato products, and processing of soft fruits and vegetables. This part has a highest unemployment rate and negative migration ratio – this situation could be improved by creating new income sources for farmers households- such as agro- tourist firm.

Each of those regions should plan their Local Development Strategies considering their natural resources; history and reviewing own potential strength and weaknesses (SWOT analysis). Their Strategy should refer to National Development Plan 2004-2006 because promotion of local development is an element of a big puzzle.

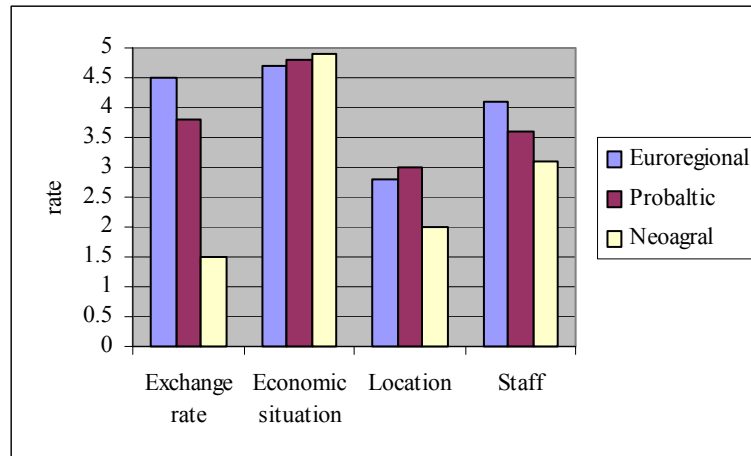
The situation of entrepreneurs in West Pomeranian Voivodship is determined by many factors one of them is location. Respondents from three parts of province showed different obstacles in their activity.

The Entrepreneurs when asked to evaluate the importance of chosen factors for their business wellbeing, by points from 5 points for the most important to 1 for very little influence; all gave the highest priority to prosperous economy with average note 4,8. Bureaucracy was named as a biggest obstruction (4,2), lack of capital, high level of taxes, complicated law and competitors were mentioned as a serious threat (4). The largest variation of opinion was observed by the influence of exchange rate on the company’s condition. Firm owners located in “Euroregional “ area considered low rate of Euro and Dollar to Polish zloty as a serious blocking factor of their development. Location was more important to companies seated in



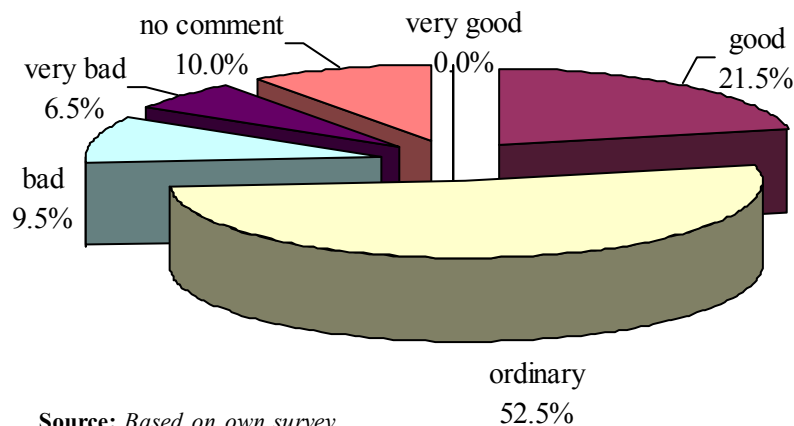
Source: Based on Założenia aktualizacji „Strategii Rozwoju Województwa Zachodniopomorskiego do roku 2015” Urząd Województwa Zachodniopomorskiego, Szczecin listopad 2004.

Fig. 1 Three strategic regions of Western Pomeranian voivodship



Source: Based on own survey.

Fig. 2 Selected factors influencing economic activity of examined entrepreneurs



Source: Based on own survey.

Fig. 3 Activity of local government in respondents' opinion

pro-Baltic and Euro regional region as it was to "neoagral" area enterprises. Such a result is probably due to concentration of exporting units near the border with Germany. The importance of personnel was also rated differently in parts of voivodship, again the more west of the voivodship the more important gets sufficient labor force. This can be interpreted with the higher unemployment rate in the southern neoagral part of examined area. Most essential factors are shown on Fig. 2.

All groups of respondents were asked about their opinion on communities offices' performance. Out of 420 subject asked, no one 0% was fully satisfied with cooperation with authorities, 21,5% assess their work as good this condition is shown on Fig. 3. Examined population points out, that local gov-

ernment workers are only interested in solving problems that concern themselves. Clerks do not contribute to better implementation of local development strategies, moreover rural society does not feel enough support from their side. Over half of inquired group evaluated local administration ordinary, almost 10% bad and 6,5% as very bad.

By such a poor assessment, it is necessary for local authorities to compensate their failure to electorate by answering their needs. Therefore respondents were asked; "what action could be taken by local officials to best stimulate development of your economic activity?" their answers were demonstrated in table 1. Firm owners recognized preferential treatment for newly established firms, exporters and SME<sup>5</sup> as a most important stimulant 27%.

<sup>5</sup> Small and Medium size Enterprises

The activity of examined subjects is very important for rural areas with high unemployment's rate (27% in south east area), such as West Pomeranian voivodship cause it generates work places. Another important issue considered by over 26% of entrepreneurs was the promotion and advertisement of communes, followed by investments in infrastructure of local area, that could result in development of tourist function in a countryside; mentioned by 13,5% respondents (mostly in seaside area). Cooperation among borderlands named by 10% of asked, witch eases obtaining EU funds for integration, social and economic needs of rural population. Some communes are benefiting from it already by partnerships with foreign communes. One of the most important concerns of border- crossing co-operation is, for instance creating better conditions for SME in the region. For this reason, joint exhibitions, business fairs, achievements shows, border-crossing workshops and seminars, exchange of economy relevant scientific findings and measured of joint market analyses and marketing strategies are organized. In this context, rendering assistance in joint regional planning and promoting infrastructural projects are important fields of activity.

Inefficiency of administrative clerks creates difficulties in the proper functioning of a business. This serious obstacle in development was indicated by 4,5% of respondents.

Research on team work within local society on rural areas indicates that 65% of respondents have negative opinion on forms of team activity. Over 55% of farmers declare not willing to cooperate with local community. They would eventually cooperate with other community members in

activity concerning; milk production (14% or answers), machinery usage (13%), selling of farm produce (11%), pigs breeding (6%).

Lack of integration within rural society is an obstacle in creating sustainable activities and resources that could improve the quality of life, and the long-term potential, of their local areas. Joint forces of commune help to protect and enhance the natural and cultural heritage and diversity.

West Pomeranian voivodship was established in this shape (as on the Fig.1) on 1 January 1999 out of the former Szczecin, Koszalin and parts of neighboring provinces as a result of Local Government Reorganization Act of 1998. The capital of this administrative region is Szczecin. The settlement network is characterized by:

- outskirt location of capital of voivodship;
- outskirt situation of all bigger cities;
- average sized 10-15 thousand citizen cities are evenly distributed among the area;
- evenly distributed small towns and communities;
- poor settlement network in forest regions.

Urban population is 70% of inhabitants of West Pomeranian this makes it 3<sup>rd</sup> urban NUTS2 in Poland. The region has over 4,4% of the Polish population concentrated mainly in 2 largest urban cities: Szczecin and Koszalin. There are 76 inhabitants per square kilometer. Unlike the other polish voivodships West Pomeranian characterize small population on rural areas (25-50 inhabitants/km<sup>2</sup>). No overpopulation as elsewhere is a chance to develop non-agricultural economic activity on rural areas. Among 114 communities of the province 30 units (26%) has a positive migration ratio. This

Table 1

**Actions, which are necessary to undertake by local authorities, to improve economic condition of entrepreneurs in opinion of farmers and firm owners**

| Action                                           | Percent of respondents |
|--------------------------------------------------|------------------------|
| preferential treatment                           | 27,0                   |
| promotion and advertisement of communes          | 26,5                   |
| development of tourist function in a countryside | 13,5                   |
| border- crossing co-operation                    | 10,0                   |
| additional/ other preferential treatment         | 8,5                    |
| improvement in infrastructure                    | 8,0                    |
| promptness of local authorities work             | 4,5                    |
| low- interest loans                              | 2,5                    |

Source: Based on own survey.

phenomena occurs in “Euroregional area” of Voivodship ( Fig.1).

West Pomeranian has still relative younger population in compare to rest of Poland. Smaller percentage of population at post- working age and much higher at pre-workig and working age indicates that. Table 2 shows that the most important social problems will appear within decade. Rapid increase of working group by already existing 27% unemployment creates a challenging task for strategy planners.

Unemployment is a serious problem in West Pomeranian. With the second highest unemployment rate in Poland after Warmińsko- Mazurskie (28,3%), this should be priority to decrease the rate. The biggest cities Szczecin (16%), Świnoujście (19,9%) and Koszalin (21%)<sup>6</sup> have lower unemployment as the rural areas in “neoagral area” of voivodship (picture1) such as counties: Świdwin, Drawsko Pomorskie, Choszczno, Szczecinek,

Ślawno Białogard, Gryfino. Those regions have at the same time negative migration ratio.

Another phenomena occurs in “pro Baltic” area where a seasonal unemployment appears due to big part of population working at trade and service for tourism.

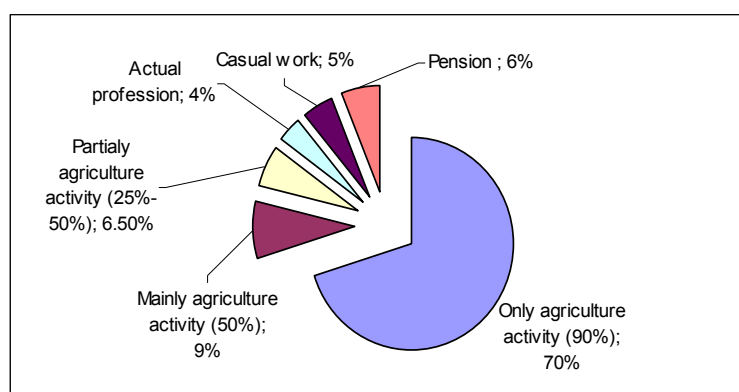
Research indicates that the largest group of respondents (70%) lives only by an agricultural production. Over 15% of tested persons admit to having also other source of income apart from farming. In pro Baltic part of voivodship an alternative income source is often agrotourist firm. However, the rate of benefiting from the capacities offered to the tourists greatly depends on the season. For this reason, the regional tourist trade needs joint solutions for ways to extend the main season and opportunities to practice leisure time activities independently on the weather conditions. 15% of asked do not treat farm as an income source. Presented on Fig. 4.

Table 2

**Population in West Pomeranian Voivodship in 2004**

| Population in West Pomeranian Voivodship |                  |                  |                |
|------------------------------------------|------------------|------------------|----------------|
| Age groups                               | Total            | City             | Rural area     |
| 0 - 14                                   | 281851           | 175817           | 106034         |
| 15 - 19                                  | 131711           | 87164            | 44547          |
| 20 - 29                                  | 288521           | 202906           | 85615          |
| 30 - 39                                  | 216791           | 149542           | 67249          |
| 40 - 59                                  | 512472           | 367639           | 144833         |
| 60 - 64                                  | 61385            | 45878            | 15507          |
| 65 and more                              | 202134           | 145390           | 56744          |
| <b>Total</b>                             | <b>1 694 865</b> | <b>1 174 336</b> | <b>520 529</b> |

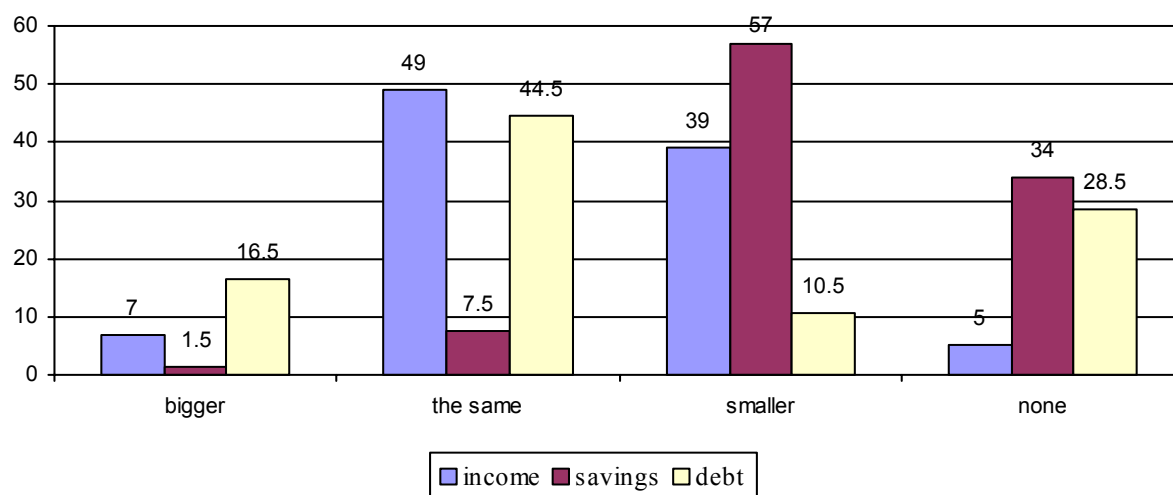
Source: Central Statistical Office, Warsaw 2005.



Source: Based on own survey.

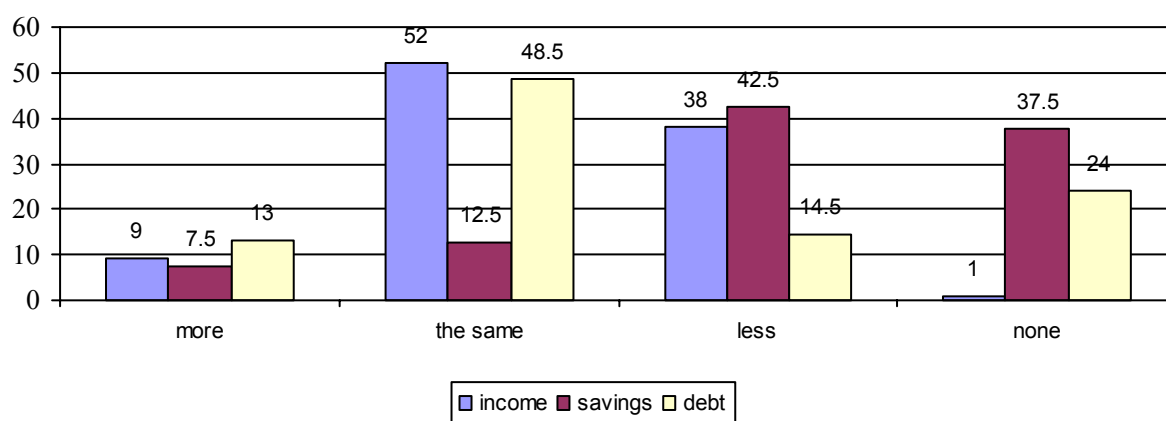
**Fig. 4 Structure of income**

<sup>6</sup> „Informacja o stanie i strukturze bezrobocia w mieście Szczecinie w 2003 roku, Powiatowy Urząd Pracy w Szczecinie, Szczecin marzec 2004.



Source: Based on own survey.

Fig. 5 Current financial condition of own household/ farm assessed by farmers



Source: Based on own survey.

Fig. 6 Perspectives of financial condition in opinion of examined farmers

Only 7% of respondents find their present income bigger than last year, worse financial situation indicated 39% tested persons. 34% farmers admit to not having any savings, but over 28% reveal that neither they personally nor the farm are indebted. On the other hand, over 71% has debts.

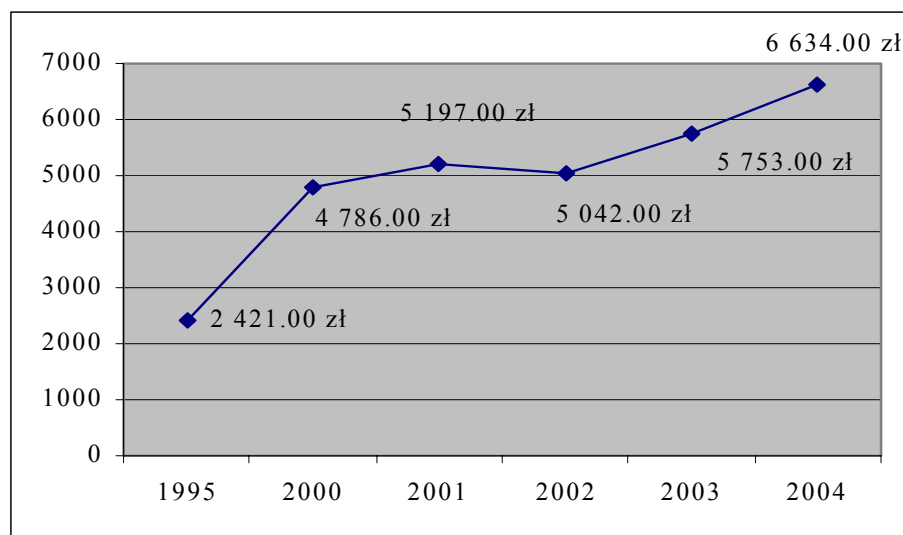
The opinions on future prospect of farm financial situation were not optimistic. Bigger savings concerned only 7,5% of questioned farmers. 9% predicted that their future income would be bigger, 52% respondents was of opinion that situation will not change (see Fig. 6.).

One of the important tasks of the survey was an attempt to assess the influence of cross border location of voivodship on rural inhabitants and farmers.

The research conducted in 2004 indicate that farmers (56%) were worried that Poland's accession to EU will cause increase of demand for land

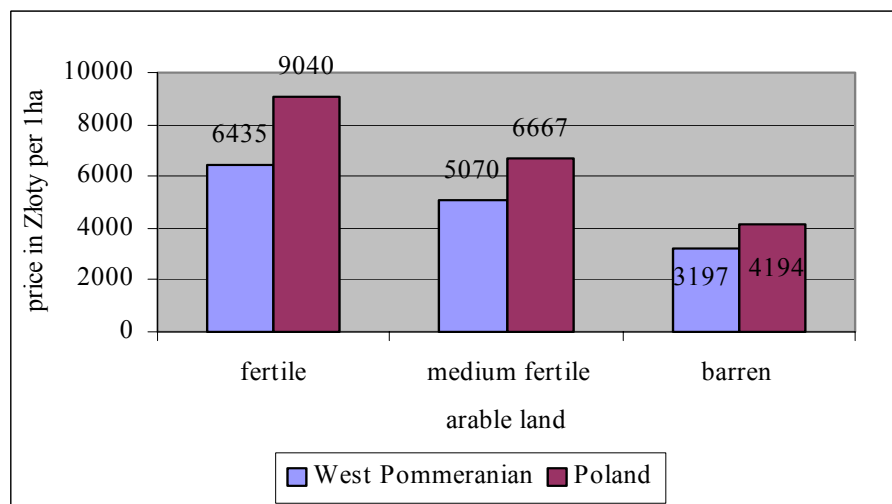
among farmers from western countries and prices of arable land will grow. However by examining the level of average prices of arable land in private turnover in 2004 which in West Pomeranian is on average equal 1289EUR (4901PLN) per 1 ha which is less in compare to average prices in Poland 1745 EUR (6634PLN) per 1 ha we prove that, those fears were yet unjustified. Based on CSO data of 1995-2004 shown on chart 6, prices of arable land did not grow rapidly after Poland's accession to EU. It is too early to assess on land price development half year after the accession – the general tendency will develop in next 1-2 years. However the land buying process is for foreigners strictly restricted so rapid changes on the agro real estate market are rarely to happen.

The anxiety of West Pomeranian inhabitants of rural areas and farmers that the prices will grow faster in their voivodship in compare to the rest of



Source: Central Statistical Office, Warsaw 2005.

Fig. 7 Average prices of arable land in private turnover in Poland in 1995-2004



Source: Data of the agricultural correspondents of the Central Statistical Office, Warsaw 2005.

Fig. 8 Average prices of arable land in private turnover

Poland were also unfounded. The average price of arable area in private turnover grows correspondingly to the average price level of land in Poland. This situation is shown on Fig. 8.

## Conclusions

Process started in Poland in 1989 called the “shock therapy” program (CIA), enabled the country to transform its economy into one of the most robust in Central Europe, but Poland still faces the lingering challenges of high unemployment, underdeveloped and dilapidated infrastructure, and a poor rural underclass. There are two parallel

directions for the Polish rural areas, one is to modernize inefficient agricultural sector of economy (7,6% of gross value added by agriculture produce 26,9% population employed in agriculture), other is the diversification of rural income sources.

The research has shown that there is an urgent need to develop entrepreneurship and favorable conditions for alternative income sources in the countryside. This could be a chance to create new places of work and reduce the high rate of unemployment.

The survey indicates difficulties in social integration of local community. Moreover, it reveals pessimistic attitude of farmers to any local actions.

Examined rural population is not satisfied with local authorities' actions. They are of opinion that local government does not put enough effort in promotion and advertising of a commune, there is lack of preferential treatment for SME and for newly established firms. They pointed out inefficiency of administrative clerks which creates difficulties in the proper functioning of a business.

Insufficient knowledge of EU accession consequences causes aversion and fear concerning Polish membership among farmers.

The current financial condition of farmers' households in farmers' opinion is not good, prospects for future are also pessimistic, only small share of respondents indicate expected increase in income.

The voivodship disposes of considerable development potential, such as:

the percentage of the younger age groups of the population; the existing higher education institutions, the potential of qualified employable people; natural potential and low environmental burden; favorable conditions for tourism; existing infrastructure and possibilities of developing the infrastructure for industry and tourism, agricultural and forestry production, the geographical situation of the region favorable for the traffic from North to South and East to West.

The strategy for West Pomeranian should consider that there are at least there areas of different conditions within voivodship. This complicates a

planning process but is also an asset. This natural diversification of region creates possibility to develop many kinds of activities. Regions that base their industry mostly on one branch (such as mines) are on a big risk in case of changes on the market. West Pomeranian has favorable conditions for shipyard industry, fishing, supplying of electricity, natural gas and mineral water, geothermal waters, salt ground water, transport, national traffic. Correspondingly, it is one of the most attractive tourists' destination with divers coastline with clean, drawn-out beaches, lakes, rivers, forests. It is one of the greenest and most ecologically pure Polish regions. Such an unspoiled, unique landscape is a part of Europe's cultural heritage. Agrotourist firms are a great opportunity as an alternative income sources for farmers.

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## **Uzņēmējdarbības aktivizēšana lauku reģionos globalizācijas kontekstā** *Enterprises activated in country regions in global context*

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### **Abstract**

In global market business success depends not only on production, but mainly from the skill and possibility to sell. Delivering product to market and adoption of market are factors hindering successful development of many businesses. Because of long distances, poor transport infrastructure and high transportation expenses, for small amount of goods are loose causing. For these reasons it is very unlikely, that we can have wide business diversity in country areas. Developing business in country areas attention should be given to the development of the services, which would bring country made products nearer to the consumers by the means of marketable way, packaging and delivery time, or to provide an integrated product delivery: field-consumer.

Integrated activities of country maybe: pretreatment (washing, cleaning, packing, storage, etc.) of agricultural production, which would increase quality of products, their appeal and possibility to deliver products on certain time and in broad assortment. These activities are hard to the each small farm owner just by themselves. Very often they are producing small assortment of products and without a pretreatment, because this is cheapest way of production, but inferior way to adopt the market.

During last years, especially after Latvia joined the European Union, Latvian producers and service businesses are greatly affected by the process of globalization. Development of regional division of labor is ongoing. Globalization is not only in world's market, but also in Latvia large trade organizations are formed. They required broad assortment and large volumes of products, which traditional Latvian small-scale producers are not able to provide.

**Key words:** globalizācija, uzņēmējdarbības aktivizēšana, lauku reģioni, diversifikācija.

### **Ievads**

#### **Introduction**

Globalizācijas process gan tieši, gan netieši skar katru starptautiskās sistēmas dalībnieku. Arī Latvija, kas starptautiskajā sistēmā ir viena no mazākajām valstīm, ir ierauta globalizācijas virpulī, no kura tai grūti izvairīties saistībā ar tās īpašo ģeopolitisko, ekonomisko un stratēģisko stāvokli. Globalizācija, ko mūsdienu pasaulē nosaka starptautisko korporāciju intereses, vērsta uz nacionālo robežu nojaukšanu un tādu spēles noteikumu radīšanu nacionālajās valstīs, kas ļautu brīvi un netraucēti pārvietot kapitālu atkarībā no pasaules tirgus pieprasījuma un nodrošinātu maksimāli efektīvu tā izmantošanu. Latvijai šobrīd nav lielu izredžu cīņā ar globalizācijas procesa negatīvajām sekām, līdz ar to intensīvāk jāizmanto nedaudzie pozitīvie globalizācijas aspekti.

Tā kā jebkuras valsts ekonomikai ir svarīga

mazo un vidējo uzņēmumu attīstība, kas ļauj izpausties uzņēmējdarbībai un veicināt izaugsmi, arī Baltijas valstīs ir sevišķi nozīmīgi piekļūt jaunajām tehnoloģijām un informācijai, kas varētu būtiski veicināt šo uzņēmumu attīstību.

Arī Latvijas iekšējo tirgu šobrīd pārņem globalizācijas procesi reorganizējot tirdzniecības sistēmu, kuru arvien vairāk pārņem ārvalstu lielie tirdzniecības tīkli. Šādā situācijā Latvijas uzņēmējiem, īpaši jau mazo un vidējo uzņēmumu īpašniekiem, kļūst arvien grūtāk stāties pretī globālā tirgus tendencēm. Tie uzņēmēji, kas kādreiz sevi pieskaitīja vidējo uzņēmumu kategorijai, šobrīd kļūst par mazajiem, jo daudzos gadījumos tiem vairs nav kur realizēt savu produkciju. Par iemeslu tam ir lieltirgotāju ķēžu drakoniskie nosacījumi attiecībā pret piegādājamo apjomu un cenu.

Laika periodā no 1996. gada līdz 2004. gadam kopējā pievienotās vērtības īpatsvarā

lauksaimniecības devums ir samazinājies no 7.8% līdz apmēram 4.0 % pie nemainīga produkcijas fiziskā apjoma [5]. Tas liecina arī par šo nelabvēlīgo cenu veidošanās mehānisma ietekmi uz lauksaimniecības produkcijas ražošanu un tās gala rezultātu.

Bieži lielveikalu noteiktā iepirkumu cena ir pat zemāka nekā uzņēmuma ražotās produkcijas pašizmaksa, taču paši uzņēmumi apzinās, ka patreizējā attīstības stadijā to galvenais konkurences ierocis tieši ir cenas pazemināšana. To apliecina arī veiktie zinātniskie pētījumi, kas visu valstu attīstību globālā tirgus apstākļos sadala trīs fāzēs:

- **pirmā fāze** raksturojas ar salīdzinoši vienkāršu, zemas kvalifikācijas darbaspēka ražotu produkciju ar zemu pievienotu vērtību. Šajā fāzē galvenais konkurences ierocis ir zema cena.

- **otrā fāze**, kuras galvenā priekšrocība ir ražošanas efektivitātes kāpināšana, kas balstīta uz investīciju piesaisti, tehnoloģiju modernizēšanu, kopuzņēmumu veidošanu un citiem pasākumiem. Šajā fāzē konkurences ierocis ir darba dalīšana un “savas nišas” atklāšana. Šo periodu nosacīti var nosaukt par investīciju periodu.

- **trešās fāzes** galvenie raksturojošie elementi ir jaunu tehnoloģiju un oriģinālu produktu izstrāde un tirdzniecība. Konkurences pamatā ir spēja radīt jaunas, oriģinālas preces, kas atrodas globālo tehnoloģiju priekšplānā. Šo fāzi nosacīti var nosaukt par inovāciju attīstības posmu.

Salīdzinot šīs ekonomiskās attīstības fāzes var izsecināt, ka tieši trešajā fāzē notiktu vislielākā pievienotās vērtības radīšana, kas neapšaubāmi palielinātu strauji IKP pieaugumu uz vienu iedzīvotāju. Taču, lai Latvija stabili varētu sasniegt inovatīvās attīstības fāzi, jābūt stingram mikro un makroekonomiskam pamatam un atbilstošai darbības videi.

Pētījums balstās uz monogrāfiskās, analīzes un sintēzes, dedukcijas un indukcijas, statistisko datu izpēti un grafiskā attēlojuma metodēm.

#### **Darba mērķis:**

- ir izvērtēt uzņēmējdarbības aktivizēšanas iespējas Latvijas lauku teritorijās piemērojoties globālā tirgus nosacījumiem.

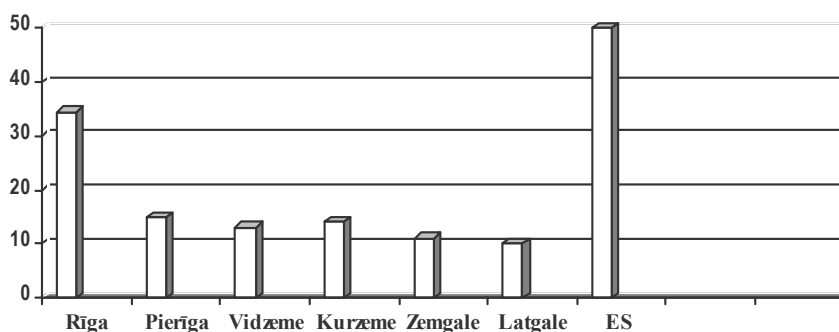
#### **Darba uzdevumi:**

- izvērtēt Latvijas uzņēmējdarbības aktivitāti reģionos salīdzinot ar citām ES valstīm;
- izvērtēt iespējas un ceļus uzņēmējdarbības aktivizēšanai laukos;
- aplūkot Latvijas biznesa vides vērtējumu ES valsts skatījumā.

Autore izvirza **hipotēzi**, ka uzņēmējdarbības aktivizēšana laukos varētu veicināt lauku teritoriju attīstību, kas varētu balstīties uz ražošanas integrāciju, lauku uzņēmējdarbības diversifikāciju un lauksaimnieku kooperāciju.

### **Uzņēmējdarbības aktivitāte Latvijas reģionos**

Vērtējot uzņēmējdarbības attīstību Latvijā, īpaši Latvijas reģionos, autore nonākusi pie secinājuma, ka Latvija kopumā būtiski atpaliek no ES vidējā uzņēmējdarbības aktivitātes līmeņa (50), nemaz jau nerunājot par atsevišķiem tās reģioniem. Vienīgais reģions, kurš nedaudz var līdzināties ES līmenim ir Rīga ar 35 uzņēmumiem, bet reģionos šis līmenis ir ievērojami zemāks un nepārsniedz 15 uzņēmumus uz 1000 iedzīvotājiem. Uzņēmēji, lai attīstītu savu biznesu, lielākoties priekšroku dod Rīgas reģionam, jo tajā ir lielas uzņēmējdarbības dažādošanas jeb diversifikācijas iespējas un katrs uzņēmējs var atrast un izmēģināt spējas sev piemērotākajā darbības veidā, ko grūti realizēt lauku teritorijās.



Avots / Source: [9].

1. att. Uzņēmumu skaits uz 1000 iedzīvotājiem Latvijas reģionos 2004. gadā  
Fig. 1 *Number of the economically active enterprises (per 1000 inhabitant)* [9]

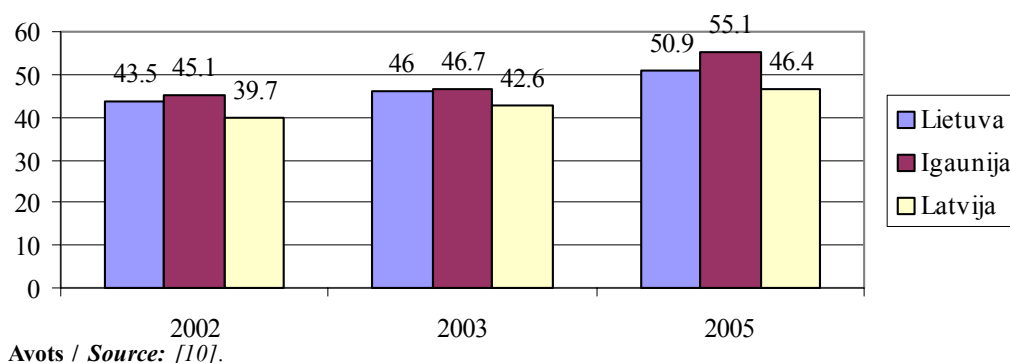
Tā rezultātā Latvija būtiski atpaliek no kaimiņvalstīm Lietuvas un Igaunijas IKP ražošanas apjomā uz 1 iedzīvotāju. Ja Igaunija ir sasniegusi 55% no ES vidējā līmeņa, bet Lietuva gandrīz 51%, tad Latvija tikai 46,4% līmenī un atpaliek no Lietuvas un Igaunijas par 2 gadiem, jo Lietuvai un Igaunijai šāds līmenis bija sasniegts jau 2003. gadā.

Valsts iekšienē reģionu atšķirības ir vēl lielākas, jo salīdzinot IKP uz 1 iedzīvotāju Latvijas reģionos, tikai Rīgas reģions varētu konkurēt ar kaimiņvalstu sasniegtu līmeni. Pārējos reģionos, kā tas redzams 3. attēlā attīstības līmenis ir salīdzinoši zems.

Latvijas reģionu lauku teritorijās lielākā daļa uzņēmumu saistīti ar lauksaimniecisko ražošanu vai saražotās produkcijas pirmapstrādi. Strādājošo

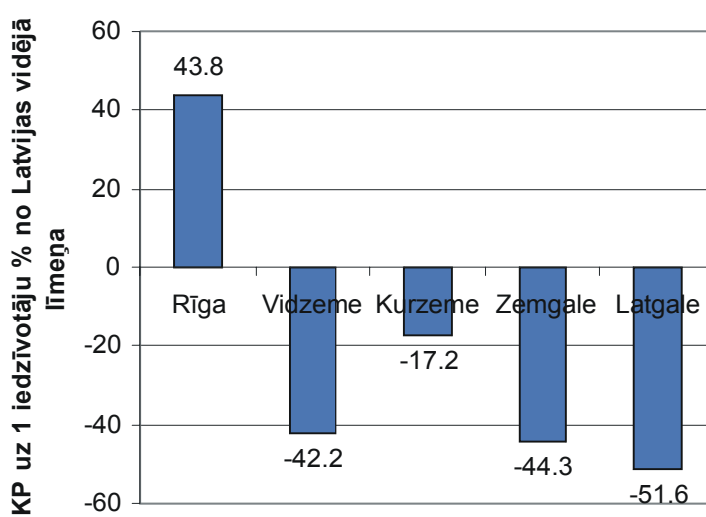
zemā produktivitāte un ārējā konkurence ir galvenie šķēršļi šīs nozares attīstībai. Lauksaimniecības attīstība būs atkarīga no lauksaimniecības ražotņu un produktu pielāgošanas ES standartiem un kvalitātes kritērijiem un no ārējā pieprasījuma. Patlaban lauksaimnieciskās produkcijas ražošana, kā tas redzams ceturtajā attēlā pārdzīvo visnotaļ negatīvas tendences.

Lai gan tieši pēc iestāšanās Eiropas Savienībā Latvijas lauksaimniecība ir guvusi jaunus stimulus tās ražošanas sakārtošanai un konkurētspējas palielināšanai, un lauksaimniecības produktivitātes koeficients palielinās, taču uz pārējo nozaru fona lauksaimniecība vēl joprojām nav sasniegusi vēlamos attīstības tempus.



## 2. att. IKP uz 1 iedzīvotāju no ES vidējā līmeņa pēc Pirktpējas paritātes standartiem

Fig. 2 GDP on the 1 inhabitant per percent from EU



Avots: Autore veidots attēls \*izejas dati [7].

Source: Figure made by author \*by data [7].

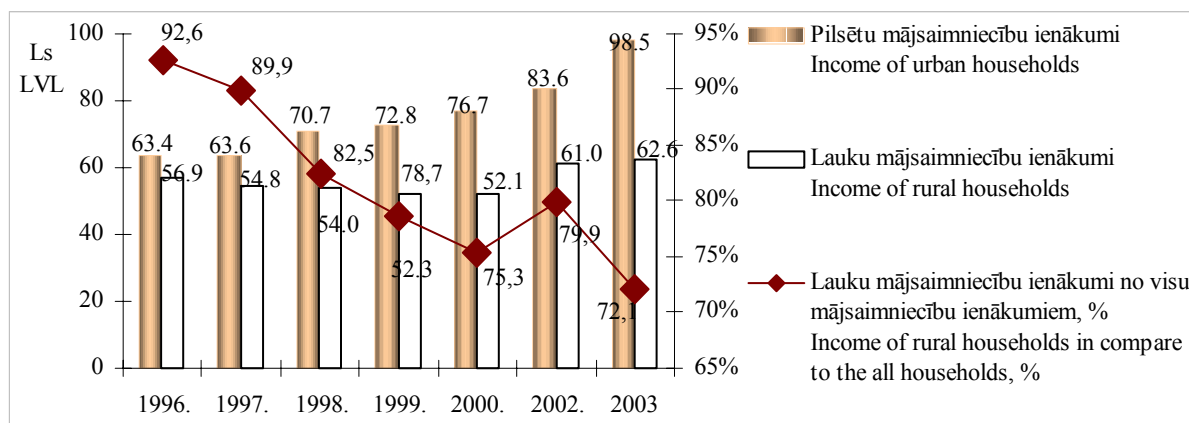
## 3. att. IKP uz 1 iedzīvotāju Latvijas reģionos % no Latvijas vidējā līmeņa

Fig. 3 GDP on 1 inhabitant in Latvian regions per percent from Latvian middle level



Avots / Source: [5].

4. attēls. IKP pievienotās vērtības izmaiņas 2002. – 2004. gadā Latvijā  
Fig. 4 Changes of GDP added value in 2002 – 2004



Avots / Source: [5].

5. att. Lauku un pilsētu mājsaimniecību ienākumu dinamika 1996.-2003.gadā, 2000.gada cenās Latvijā  
Fig. 5 Dynamics of the income of the urban and rural households in 1996-2003, in prices of 2000

Tajā pat laikā iestāšanās ES rada zināmas bažas par lauksaimniecības tālāku attīstību, jo Latvijas lauksaimniekiem par vienu no peļņu nesošajām nozarēm ir cukura ražošana. Neskatoties uz nozares līdzšinējo ienesīgumu gan Latvijas lauksaimniekiem, gan cukura ražotājiem, ES cukura tirgus reformas rezultātā tās turpmākā pastāvēšana Latvijā ir zem jautājuma zīmes. Jau sākusies cukura ražošanas apjoma samazināšanās par 3%, kas atbilst 13-14 tūkstošiem tonnu cukurbiešu.

Lauksaimniecības attīstības tempos vērojama lejupslīde, kas būtiski ietekmē arī lauku reģionu kopējo IKP ražošanas apjomu un iedzīvotāju labklājības līmeni.

Piektajā attēlā atspoguļotajos pilsētas un lauku mājsaimniecības ienākumu apjomos parādās lielas atšķirības, ko izsauc arī atšķirīgais uzņēmējdarbības aktivitātes līmenis laukos un pilsētās. Šādas

nevienlīdzīgas attīstības rezultātā palielinās atšķirība starp dzīves līmeni pilsētās un laukos, kas var būtiski ietekmēt lauku un to attīstības nākotni. Lai gan vērojamas pozitīvas tendences, disproporcija ar citām nozarēm vēl nav likvidēta.

Lauksaimniecības nozarē strādājošo ienākumu līmenis ir zemāks kā vidēji valstī. Lauksaimniecībā, medniecībā strādājošo darbinieku vidējā bruto darba samaksa 2004. gadā bija Ls 143,6 mēnesī, kas ir tikai 68% no vidējās bruto darba samaksas valstī. Salīdzinājumā ar 2003.gadu, 2004.gadā vidējā bruto darba samaksa lauksaimniecībā un medniecībā pieauga straujāk kā iepriekšējos gados, palielinoties par 19,6%, un vidējā bruto darba samaksa strādājošajiem tautsaimniecībā palielinājās par 9,6%. Neskatoties uz darba samaksas kopējo palielinājumu labklājība joprojām ir Latvijas tautai aktuālākais jautājums, īpaši lauku teritorijās. Materiālā

labklājība ir saistīta ar citiem aspektiem, kas nosaka mūsdienu cilvēka kopējo labklājības līmeni. Galvenokārt kopējais labklājības līmenis atkarīgs no jebkura cilvēka iespējām realizēt savas galvenās tiesības – tiesības uz darbu. Līdz ar to arī nodarbinātības līmeņa paaugstināšana laukos un jauna darba vietu radīšana ir pamats lauku iedzīvotāju labklājības līmeņa paaugstināšanai.

Svarīgākais lauku teritoriju attīstībai pēc iestāšanās ES ir nodrošināt vienlīdzīgākas konkurences iespējas lauksaimniekiem ES iekšējā tirgū, savukārt ES fondu sniegtais atbalsts veicinās lauksaimniecības modernizāciju un darbības diversifikāciju.

Laukos ir salīdzinoši liels brīvu darba roku īpatsvars, taču laukos darba meklētāju ir mazāk nekā pilsētās, jo laukos dzīvojošo izglītības līmenis un dzīves laikā uzkrātā profesionālā pieredze daudzos gadījumos nav piemērota šodienas darbaspēka tirgus un uzņēmējdarbības prasībām. Lai veicinātu uzņēmējdarbības aktivitāti lauku teritorijās, nepietiek ar diversifikācijas iespēju apzināšanu un popularizēšanu, bet ir nepieciešama vispusīga pieeja, kas ietvertu gan lauku iedzīvotāju profesionālo pārkvalifikāciju, uzņēmējdarbības pamatzināšanu, vispārējo ekonomisko zināšanu un konsultāciju ieguves iespējas. Šajā procesā jāiesaistās gan pašvaldībām, gan valsts nodarbinātības dienestam, gan arī dažādiem atbalsta fondiem, kas finansiāli varētu veicināt šāda procesa norisi.

Uzņēmējdarbības vides attīstīšana un bezdarbnieku skaita samazināšana ir ne tikai Latvijas, bet arī lielākās daļas Eiropas Savienības valstu problēma. Īpaši nozīmīga lauku teritoriju attīstībā varētu būt no Skandināvijas valstīm pārņemtā mentoringa kustība, kas daudzās pasaules valstīs ir atzīta par vienu no efektīvākajiem veidiem uzņēmējdarbības aktivizēšanai. [3] Mentoringa kustība ietver sevī gan izglītības, informācijas ieguves, gan arī konsultatīvas iezīmes. Lauku teritorijās tas ir būtiski, jo daudzos gadījumos uzņēmējdarbības aktivitāti bremsē informācijas ieguves, nepieciešamo zināšanu apgūšanas un finansējumu piesaistes problēmas.

Arī pašām pašvaldībām šāda starpniecība būtu izdevīga un iztērētie līdzekļi nākotnē atmaksātos, jo aktivizējoties uzņēmējdarbībai, mazinātos bezdarbs, sociālā spriedze, kā arī palielinātos nodokļu ieņēmumi.

Kopumā Latvijā var akcentēt vairākas problēmas, kuras izmantojot mentoringa procesos uzkrāto pasaules pieredzi varētu atrisināt arī Latvijas reģionos.

### **Uzņēmējdarbības aktivizēšana laukos ar diversifikācijas palīdzību un to ietekmējošie faktori**

Pēc Latvijas iestāšanās Eiropas Savienībā, arī Latvijas ražotājus un pakalpojumu sniedzējus lielā mērā skar globalizācijas process. Notiek reģionālās darba dalīšanas tālāka attīstība. Globalizējas ne tikai pasaules tirgus, bet arī Latvijas tirgū veidojas lielas tirdzniecības organizācijas ar prasībām pēc plaša sortimenta un liela apjoma piegādēm, kādas nav spējīgi nodrošināt Latvijai tradicionālie sīkražotāji.

Pēdējo 10 gadu laikā ES ir rosinājusi strukturālu pārkārtošanos izsaucot padziļinājumu sociālajā un vides krīzē. Bagātie kļūst bagātāki, bet lielākā daļa sabiedrības kļūst nabadzīgākā, jo sociālā labklājība, vides aizsardzība un sabiedrības vajadzības tiek atvirzītas otrajā plānā.

Globalizācija pēc būtības nav jauns jēdziens, jauna ir tikai pakāpē, kādā nacionālās un lokālās ekonomikas tiek sasaistītas vienotā sistēmā. Lielā mērā globalizācijas procesi notiek pateicoties komunikāciju un informācijas tehnoloģiju attīstībai.

Daudzos gadījumos uzņēmējdarbības veiksmē atkarīga ne tikai no preces ražošanas, bet galvenokārt no prasmes un iespējām to realizēt. Daudziem uzņēmējiem tieši preces nogādāšana tirgū un tirgus apguve ir faktori, kas neļauj veiksmīgi attīstīties, jo lielo attālumu, sliktās transporta infrastruktūras un pārvadājumu dārdzības dēļ nelielie preču pārvadājumi rada zaudējumus. Šo iemeslu dēļ maz ticams, ka laukos varētu veidoties ļoti plaša uzņēmējdarbības dažādība. Vairāk uzmanības attīstot uzņēmējdarbību laukos vajadzētu pievērst to pakalpojumu attīstīšanai, kas laukos ražoto produktu tuvinātu pircējam, tam pieprasītajā formā, iesaiņojumā un piegādes laikā, jeb nodrošinot integrētu produkta piegādi lauks – patērētājs.

Lauku rajonos uzņēmējdarbības diversifikāciju var panākt pārceļot uz lauku teritorijām ar lauksaimniecības produkcijas

ražošanu integrējamās darbības veidus, kas laukos varētu būt lauksaimniecības produkcijas pirmapstrāde (mazgāšana, tīrīšana, fasēšana, uzglabāšana u.c.), kas paaugstinātu piegādāto produktu kvalitāti, pievilcību un iespēju piegādāt produkciju noteiktā laikā un plašā sortimentā. Šādas papildus darbības ir grūti realizēt katram nelielam zemnieku saimniecības īpašniekam, kas bieži vien ražo šaura sortimenta produkciju bez tās pirmapstrādes, jo tas finansiāli ir pats lētākais ražošanas variants, bet sliktākais variants tirgus apguvei.

Pieaugot globalizācijas tendencēm pasaules ekonomikā, paredzama arī ievērojama preču plūsmas aktivizēšanās. Šajā kontekstā Latvijā būtu veicināma arī amatniecības attīstība, kas varētu popularizēt Latvijas kultūru pasaules valstīs, kā arī sadarbībā ar rūpniecību un citām nozarēm, kļūt par pastāvīgu ražošanas un pakalpojumu sniegšanas veidu sekmējot profesionāli orientēta, ekonomiski un sociāli aktīva sabiedrības vidusslāņa veidošanos visā Latvijas teritorijā, īpaši lauku teritorijās. Šodienas globālajos tirgos, kā arī ES nav vietējo tirgu, tādēļ arī katram mazajam uzņēmumam ir teorētiska iespēja šajā tirgū iekļūt, bet līdz ar to tam arī tā piedāvātajam produktam jābūt labākam vai tikpat labam, kā ikvienam starptautiski pazīstamam produktam.

Pamats jebkuras valsts tautsaimniecības stabilitātei un augšupejai ir augsti attīstīta ražošanas sfēra, jo pakalpojumu sfēra nedod iespēju uzsūkt visu rūpniecības un lauksaimniecības lejupslīdes atstumto un par lieku kļuvušu darbaspēku.

Tomēr šo mērķu sasniegšanai nepieciešama valsts līdzdalība, lai panāktu ne tikai kvalitatīvas transporta infrastruktūras kā tranzīta nodrošinātājas, bet arī tranzīta un rūpnieciskās ražošanas racionālu simbiozi.

## Biznesa vides vērtējums

Lai Latvija varētu pretendēt uz ES finansējuma piesaisti un uzņēmējdarbības aktivizēšanu, ļoti svarīgi ir radīt pievilcīgu biznesa vidi, kas veicinātu vēlmi uzņēmējdarbību veikt tieši Latvijas teritorijā, vai Latvijas kontekstā – lauku teritorijās.

Pasaules Bankas speciālisti veica konkurences un biznesa vides vērtējumu 80 valstīm, kurā Latvija ierindojas 42 – 48 vietā un ir zemāka par visām pārējām ES jaunajām dalībvalstīm, izņemot Rumāniju un Bulgāriju. Latvija būtiski atpaliek arī no kaimiņu valstīm – Lietuvas un Igaunijas, kas liecina, ka Latvija nespēj elastīgi piemēroties globālā tirgus un jaunajiem ekonomiskajiem apstākļiem, kā to ir spējušas mūsu kaimiņvalstis.

Kopumā novērtējot Baltijas valstu ekonomiku plusus un mīnus, autore nonākusi pie secinājuma, ka viens no Lietuvas ekonomikas plusiem, salīdzinot ar Latvijas ekonomiku, ir tas, ka Lietuvai tā ir decentralizēta. Latvijā gandrīz 60% no IKP tiek radīts Rīgā, kā arī politiskās un kultūras dzīves 80% ir koncentrēta Rīgā.

Igaunijas stiprās puses savukārt ir attīstība transporta jomā, tūrisma un informācijas tehnoloģiju nozarē.

Latvijā bažas lauksaimniecības attīstībai rada arī straujais energonesēju cenu pieaugums un valdības neizlēmība alternatīvo nesēju straujākai ieviešanai Latvijas tautsaimniecībā.

Pēc Starptautiskās Tirdzniecības organizācijas nosacījumiem,[2] Latvijā, Lietuvā un Igaunijā valsts nedrīkst tieši veikt nozaru subsidēšanu, bet ir daži izņēmumi. Ieteicamās nozares, kuras valsts var subsidēt ir inovācijas un pētniecība, kas attiecībā uz alternatīvo enerģijas avotu ražošanas ieviešanu Latvijā būtu atbalsts ne tikai jaunu

1. tabula / Table 1

### Valstu biznesa vides reitingi 2003. gadā *Ratings of business environment in Baltic states*

| Valsts         | Konkurētspējas reitings | Uzņēmuma darbības un stratēģijas reitings | Valsts biznesa vides kvalitātes reitings |
|----------------|-------------------------|-------------------------------------------|------------------------------------------|
| <b>Latvija</b> | <b>45</b>               | <b>48</b>                                 | <b>42</b>                                |
| Igaunija       | 30                      | 36                                        | 28                                       |
| Lietuva        | 40                      | 39                                        | 39                                       |
| Polija         | 46                      | 46                                        | 45                                       |

Avots / Source: [2].

nozaru veidošanai, bet arī būtiskām strukturālām izmaiņām patreizējā lauku teritoriju iedzīvotāju nodarbinātībā un uzņēmējdarbības aktivizēšanā.

Daudzu pētījuma autori arī norāda, ka daudzas pēdējo gadu ekonomiskās attīstības neveiksmes ir piedzīvotas valstīm “iesprūstot” ekonomisko attīstības posmu pārejas vietās. [1,2,4] Daudzi Latvijas uzņēmumi, var būt pat valsts kopumā, ir “iesprūduši” starp faktoru un investīciju posmiem. Šie pārejas posmi bieži prasa arī jaunu valdības pieeju tirgu un uzņēmumu organizācijai. Diemžēl daudzas valdības, šajā gadījumā arī Latvijas valdība, pilnībā neapzinās šāda pārejas posma nepieciešamību globālās ekonomikas apstākļos. Līdz ar to vecās stratēģijas var pārtapt jaunos trūkumos un kļūt par kavēkli valsts un tās uzņēmumu konkurētspējas paaugstināšanā.

## **Secinājumi**

### **Conclusions**

1. Globalizācijas process gan tieši, gan netieši skar katru starptautiskās sistēmas dalībnieku.

2. Globalizācijas apstākļos īpaši svarīga kļūst valstu un uzņēmēju konkurētspēja.

3. Uzņēmējdarbības aktivitāte Latvijas reģionos salīdzinot ar ES valstīm ir vidēji 2,5 reizes zemāka.

4. Latvijas lauku pamatdarbība – lauksaimnieciskā ražošana savu ietekmi IKP veidošanā arvien samazina.

5. Arvien vairāk palielinās atšķirības mājāsaimniecību ienākumos laukos un pilsētā.

6. Laukos ir daudz nenodarbinātu cilvēku, kas ir slikti piemēroti šodienas darba tirgus prasībām.

## **Priekšlikumi**

### **Proposals**

1. Lai paaugstinātu valsts un tās uzņēmumu konkurētspēju, jāveicina pozitīvas biznesa vides veidošanās informācijas un finanšu piesaistes jomā.

2. Lai aktivizētu uzņēmējdarbību laukos, jāattīsta lauksaimniecības produkcijas pirmapstrādes un pārstrādes ražotnes lauku teritorijās, kā arī jāveicina uzņēmēju pieredzes pārnese no citām ES valstīm, tajā skaitā no Lietuvas un Igaunijas.

3. Pašvaldībām kopā ar valsts nodarbinātības dienestu un Reģionālās attīstības fondu jāveicina mentoringa kustība laukos, kas veicinātu izglītības, pieredzes un finansiālo iespēju paaugstināšanu lauku iedzīvotāju vidū.

4. Jāveicina lauksaimniecības produkcijas pārstrādes uzņēmumu izvietošana lauku teritorijās.

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## Region – its Constituents and Coherence

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### **Abstract**

In the paper the region has been treated as the main point of reference. In each region, the internal as well as external conditionings have to be taken into consideration. In case of the internal ones, the main focus of research has mostly been on the regional potential, i.e. natural resources, cultural and natural values, and the management issue. The external conditionings, in turn, should take into account the position of the region in the state structure. This position depends, in large measure, on the internal conditionings and, especially, on the force of competitiveness and the so-called regional coherence.

Each region constitutes a certain, peculiar entity which consists of many administratively stated elements, i.e. areas of different NUTS and LAU levels. These areas may be widely differentiated, presenting different levels of administrative subordination. The peculiar mosaic of these constituents within the region may have a form of a desired diversification or problematic disparities. Whichever kind of regional spatial differentiation is being dealt with, a higher or lower level of regional coherence can be experienced. Hence, it seems that the phenomenon of coherence of a region is of intrinsic importance, indicating the state of regional equilibrium. The paper stresses the importance of theoretical aspects concerning the constituents of a region and the phenomenon of its coherence, considering at the same time cohesive forces and the issue of compactness, as well as the role and significance of rural development. This development comprises rural areas multifunctionality and also their sustainability, in accordance with the idea of sustainable development.

**Key words:** Region, constituents, cohesion, coherence, compactness.

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### **Introduction**

The EU enlargement to 25 Member States is an unprecedented challenge for its competitiveness and internal cohesion. At the same time, there is a threat of increasing differences in economic development and of shifting the problem of inequality to the East. The problem of internal cohesion refers especially to the regional NUTS 2 level. These are the regions which are the main constituents of the whole European Union structure, and thus, their internal structure is of intrinsic importance considering the cohesive forces and the phenomenon of coherence within the region. It is the coherence that may decide about the level of competitiveness of a given region treated as a compact whole. Additionally, the coherence, combined together by cohesive forces, leads to the state of balance (spatial, population, etc.) in a region influencing simultaneously the competitive power of a province within the state.

The key goal, being at the same time the main problem of the paper is to find the relationships between the region (including its constituents) and

the question of coherence with regard to cohesion and compactness. The following tasks have been set for reaching the key goal:

- 1) to describe the order and principles of regional coherence;
- 2) to find the feedback between regional coherence and developmental opportunities of a region;
- 3) to discover the proper regional constituents (e.g. within the administrative division or NUTS) and unlock their potential which would influence regional development;
- 4) to find proper definitions to distinguish three regional phenomena: coherence, cohesion and compactness of a region.

In the research, the methods of logical analysis, as well as descriptive analysis, have been used. The materials used in the research concern the reports of the European Commission and the regulation of the European Parliament. Additionally the publication referring to the concept of Euroregions treated as a chance for real integration has also been used.

### **Region as the main point of reference and its constituents**

The region is just under the state (*Le niveau juste en dessous de l'Etat*) – this well-known European sentence points to the intrinsic role and position of a region in the European Union. Despite the NUTS nomenclature, which distinguishes two levels referring to the region (NUTS 1 and 2), the region, i.e. province, concerns only NUTS 2 level, while the state stands for NUTS 0 level, which means that we neglect NUTS 1 level, artificially created in Poland. In fact, every region in Poland consists of three kinds of components at three different sub-levels. Each from the 16 Polish regions comprises from 1 to 5 subregions at NUTS 3 level – artificially created in Poland, including 45 subregions. Before the administrative reform in 1999, the former 49 voivodeships had been the equivalent of NUTS 3 level. Next in the hierarchy are the former NUTS 4 and 5 levels, currently called LAU 1 and 2 levels (Local Administrative Units). These are the local levels of districts and communes. The number of land-districts per one region varies from 11 to 37.

Additionally, the European Parliament regulation of 26<sup>th</sup> May 2003 stated the population thresholds for NUTS 2 and 3 levels, i.e. for NUTS 2: min. 800,000 / max. 3,000,000 and for NUTS 3: min. 150,000 / max. 800,000 people [European Parliament 2003]. Presumably, these strict ranges were supposed to order the statistics and regional nomenclature, whereas in fact, they have created a kind of chaos not helping at all in the real ordering of the regional issue. The main problem lies in the fact that the regions have certain historical, geographical, cultural, natural, spatial, social and, finally, economic conditionings which determine their delimitation. Grouping certain areas together in regions or regions together in bigger regions at NUTS 1 level, only from the statistical point of view (even from statistical reasons) seems not to influence in a positive way the issue of regional compactness and coherence. Anyway, the region at NUTS 2 level should remain the only point of reference, regarding the competitiveness and the subjective role of a region in future Europe.

### **Coherence of the region**

The region treated as a basic element of the EU structure ought to maintain its holistic char-

acter with a certain degree of homogeneity. The differentiation within the region should be understood as a desired form of diversification instead of dangerous disparities. Hence, the region should keep its all fields of activities in equilibrium. This sort of balance is achievable in case of a perseverant process leading towards coherence. It is just the coherence that enables the region to remain united, to be consistent, acquiring at the same time the *esprit de corps*. The adjective “coherent” refers also to congruity, i.e. two or more sets of districts or communes are constantly linked to each other, creating positive permanent interactions. Coherence refers to the order of consistency, harmony, being simultaneously a certain quality, recommending the regional constituents to be united within a body, i.e. a region or district united by the actions of e.g. commune forces combined together within the state of cohering.

Looking for algorithm for regional coherence, one must find determinants which may influence the different levels of coherence. These levels will depend on the stage of the developmental multi-field process in a region. This process, in turn, should keep the balance in each stage towards full coherence. The determinants influencing the coherence ought to concern the socio-economic, spatial, ecological aspects with special stress on regional heritage, entrepreneurship and, finally, competitiveness.

The idea of coherence for the region means that it should be easy to understand, logical as a whole, consistent and clearly united, having constant internal relationships. The multi-aspect identity of the region does not exclude its diversity in terms of the range of differences. Thus, the aim is to create and maintain a constant phenomenon or even trend, i.e. process of regional entity or identity in diversification (not only understood as a slight differentiation).

Considering all aspects mentioned above, there seems to be a clear feedback between regional coherence and developmental opportunities of the region. Only a clear vision of the region may give an opportunity for the region in terms of its developmental progress and competitiveness.

### **Phenomenon of cohesion**

The phenomenon of cohesion refers to the act or process of cohering, i.e. sticking together tightly in a mass or group, with the use of cohesive forces

that cause this. It denotes a certain sort of interdependence which in case of regional development concerns the links between the communes and next between land-districts. These links of a multi-field substantial character are the positive connections which attract rural areas, being at the same time a proof for the existence of inter-area forces between communes or districts. Mutual attractions of the areas of the same region lead to the phenomenon of cohesion which, in terms of regional objectives, aims at being united and forming a whole. Thus, positive links and interactions between NUTS 3, LAU 1 and 2 within one region seem to be indispensable. Hence, the parts of the region are united throughout the whole regional structure, i.e. all rural and urban areas, whereas cohesive forces are the forces between the communes that act to unite them. Thus, the region, thanks to cohesive forces, is able to maintain its coherence and unity which enables regional compactness towards its competitiveness. Summing up, the cohesive forces make acquiring the status of regional coherence possible.

### **The issue of compactness and its consequences**

Compactness ought to be treated as a practical result of the implementation of the idea of coherence. One could also call it a physical evidence (of implementation) of the idea of coherence, enabling in effect the competitiveness of a well-united and integrated region. The compactness of a region gives the output image of a province in a synthetic way, not neglecting its diversification and ranges of adjustment and adaptation to different inter-regional conditionings and relationships. Compact regions, in consequence, form a serious challenge for real integration of the enlarged European Union.

The concept of real integration requires an integrated approach. Considering the complexity of this problem, there are three main elements ordering the concept [Koreleski 2004]:

- 1) *argumentum*;
- 2) *forma*;
- 3) *efficientia*.

The first element – *argumentum* (content of assumption) – should be understood as a necessity of certain values and their hierarchy creating the idea. It ought to be like a road sign in our process of integration. In our case the example of *argumentum* may be the idea of coherence.

The second one – *forma* (form) – insists on the way of behaviour while introducing the process of integration with special regard to the attitude issue. A positive attitude without any prejudices, which might have been intrinsic in the past, is a key to the future relationships between societies of a common region. Unfortunately, in certain areas of Europe this element seems to be the most difficult to overcome by the local communities. In our case it refers to the mechanisms and ways and concerns the cohesion and, exactly, cohesive forces.

The third element – *efficientia* (effectiveness) – refers to the practical results of the integration process in the range of social, cultural, economical and mentality relations. In our case it concerns the compactness treated as a practical implementation and result of the idea of coherence, leading at the same time towards competitiveness of a region [comp. Koreleski 2004].

### **Order and principles of coherence**

The notions of coherence, cohesion and compactness described above, need to be put in order, so as to see their logical sequence. An example of such an order has been presented below.

The order of regional coherence:

- 1) cohesive forces (cohesion), standing for mechanisms and ways of a process;
- 2) coherence, meaning the idea, concept;
- 3) compactness, being a practical result of points 1 and 2, i.e. coherence and cohesive forces;
- 4) competitiveness.

Looking at this “4C”, order we may notice that coherence may be treated as a linking element towards competitiveness.

Apart from the order, there are also “4C” principles referring to the process leading to competitiveness:

- 1) co-existence principle, meaning the administrative units with similar problems and objectives, situated at the same time close to each other;
- 2) cooperation principle, meaning the communes or districts should collaborate with each other towards common development of their region;
- 3) consistency principle, meaning the collaborating areas ought to pursue this process consequently;
- 4) congruity principle, meaning the real ability for competing.

Additionally we may notice that during the cooperation between certain administrative units

within a region, the so called synergy effect may be achieved. It relies on a bigger effect of collaboration, as if these communes or districts were working separately. Thus, we may acquire a certain synergistic added value.

### European Union policy

The future of the European policy waylays to reduce disparities and to promote greater economic, social and territorial cohesion. Thus, the first report on economic and social cohesion, created in 1996, in accordance with the article N°130b of the EU Treaty, explains that development, in the spirit of cohesion, should be understood as a harmonious process leading to reduction of disparities between different regions and reduction of backwardness of the most problem areas including rural areas [European Commission 1996].

The current EU aims within the cohesion policy point out the following objectives [European Commission 2004]:

- 1) convergence: supporting growth and job creation in the least developed Member States;
- 2) regional competitiveness and employment: strengthening the competitiveness and attractiveness of regions, taking into consideration their differentiation and conditionings of this differentiation, as well as improvement of work quality and effectiveness and social integration;
- 3) European territorial cooperation: promotion of permanent and sustainable development in the whole area of the EU, as well as holistic, harmonious integration of the EU and cooperation on the border and supra-national levels.

Additionally, one of the priority axes approved by the Commission refers to the economic diversification of rural areas and life quality improvement, especially in the regions having persistent problems with developmental handicaps, in which the idea of multifunctional and sustainable development in rural areas is of utmost importance.

### Conclusions

The article is mostly of theoretical character dealing with the problems concerning the regional coherence issue. Obviously, in such a short paper it is impossible to conduct a multi-criteria analysis in order to establish how far different functions can simultaneously be fulfilled within a region leading at the same time to the

higher level of its coherence. The order, principles of regional coherence, as well as the notions of three regional phenomena: coherence, cohesion and compactness of a region have been described. The feedback between regional coherence and developmental opportunities of a region has to take into consideration the necessity of pursuing the constant process of balancing the multi-field matrix of determinants of development referring to the following aspects: socio-economic, ecological, spatial, cultural and natural heritage, entrepreneurship, competitiveness, etc. The intrinsic element in the phenomenon of coherence is to synchronize multiple actions in an inductive way, considering at the same time the recommended perseverance. The next problem refers to the issue of coherence of a region regarding different types of territorial division units. The lower the level of administrative units the bigger chances for real cohesion, i.e. the cohesive forces may act more efficiently. Hence, the best opportunity to start with the cohesion mechanism concerns LAU 2 level, i.e. the level of communes, where the access to natural and cultural resources, which may form their potential, is the best. The next stage that is the stage of aggregated communes forming land-districts, provides a more spectacular shape, considering the cohesive interactions between the land-districts within the whole region. The idea of coherence denotes a process of the bottom-up way of achieving the coherence of the region. There are three dimensions of this issue:

- 1) horizontal – concerning multi-field determinants of development;
- 2) vertical – referring to the administrative structure of LAU 1 and 2 levels reaching as far as NUTS 2 level (neglecting or not NUTS 3 level, depending on the identity issue of its inhabitants);
- 3) diagonal – considering the continuity of time when achieving the progress in terms of coherence.

Looking from the further perspective at this process we may notice that there is a need for more cohesion in the enlarged Union. The cohesion policy of the EU considers the increasing trend to promote more balanced and sustainable development in the regions of Europe. The European idea of convergence is perceived as a support for development and the creation of new work places in the least developed states and regions, while in regional competitiveness and employment the changes are anticipated and promoted. In fact,

convergence may also refer to the understanding of all notions of coherence, cohesion, compactness and, consequently, competitiveness, which is not possible without European territorial cooperation where promoting the harmonious and balanced development of the Union territory (basing on the intrinsic role of regions as main constituents) is of fundamental character. Summing up, without a coherent and cohesive approach and perception of the regional development issue, future Europe of regions would have serious problems while competing with other areas of the globalized world.

### **Final remark**

The complexity of the question of the region's coherence requires the consciousness of the variety of individual different processes of development resulting in consequence in a higher or lower power of competitiveness. The purpose of the article was not to give the exact examples of different regions' coherence in the European Union but to show certain phenomena and mechanisms leading the defined processes to results. The goal of

the paper was to present and to stress the theoretical aspects of these processes in order to understand the role of the orientation to processes, regarding the step-by-step phenomena and mechanisms in contrast with the exceptional, very popular orientation to effects only.

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## **The Assessment of Siauliai Region Development Areas in the Aspect of Dwellers' Opinion**

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### ***Abstract***

The plan of regional development can be implemented successfully only when the entire community understands and supports its main provisions and ideas. When planning the development of any region, i.e., the means to reach some specific goals, not only the competences, abilities and responsibility of the officials liable for the preparation of the plans, but also the participation of dwellers in the creation of the welfare of their living environment, the problems of which they know the best, is important. In 2003 while planning the development of Siauliai region, the dwellers were enabled to influence the future of their region by means of a survey. The dwellers expressed their opinion about the assessment of the areas of regional development and the demand of those areas for investment. The results of the survey did not elate: the civil democratic attributes of social life of the country were devalued, the passivity for participation was expressed, the objects, which required a lot of investment (e.g., the Hill of Crosses) were underestimated. In 2005 the authors of this article carried out the repeated research for the purpose to find out and compare how the assessment of individual sectors by Siauliai region dwellers, as well as their activity has changed over two years of the upturn of socio-economic situation. The research of 2005 has shown that both in 2003 and 2005 agriculture is the most critically assessed and most supported sector. The sector of industry and business is assessed most favourably. During the repeated survey the respondents assessed all sector areas more favourably than during the previous survey. Both in 2003 and 2005 the dwellers have assessed the sectors and their areas more critically, the more they identified them as requiring more investment. The respondents' answers, when most areas were assessed as equal, i.e., on average, show that the dwellers do not have civic competences yet, they do not think that their answers would be regarded. Partly this shows the dwellers' indifference to the participation in the development process of their own region.

**Key words:** public participation, planning of the development of Siauliai region, dwellers' opinion.

### **Introduction**

Regional development is seen as a shift of economic efficiency of a region and social development, which is influenced by the rate of unemployment, the level of wages, the level of health and wealth, the quality of living environment, etc. Every region has different priorities, strategies, thus different problems of regional development as well. The ways for the solution of problems of regional development should be generated due to the efforts of local governance and public. The development of the actions of regional development influences the raise of investment and ensures the development of regions and places, which

can be implemented successfully only when the entire community understands and supports its main provisions and ideas. Collective search for solutions is more efficient when the public is involved, when it is based on free initiative and the level of broad spectrum competence. For this purpose it is necessary to create the mechanism stimulating public participation in regional development.

Public participation involves ordinary citizens in social and economic decision making. Moreover, participation, which enables the influence upon decisions, also allows participation on larger scale and reduces the number of conflicts (Smith, J., 2003). Public participation in governance is not only a tool of regulation of political

and social relationship, it helps highlight the advantages and disadvantages of regional governance, the wishes of different social layers and goals at formulation of real objectives of the development.

In order to implement public participation in the governance of regional development a lot of means are used. One of them is the survey of the dwellers of a region.

In Siauliai region (as well as in other regions of Lithuania) until the year 2003 any sufficient, systematic, methodical and purposeful dwellers' survey, the results of which would be used to plan the development of individual areas of a regional economy, was not carried out. In 2003 the organisers of the strategic development plan of Siauliai region carried out the dwellers' survey, the results of which were used to plan the development of the region. In 2005 a repeated survey was carried out for the purpose to find out and compare how the assessment of individual sectors by Siauliai region dwellers (as well as their activity, which is the basis of participation in governance of regional development) has changed.

To carry out the research the **method of survey** was used. The questionnaire was designed in the scientific Social Research Centre of Siauliai University in 2003. It was used both for the survey of dwellers' opinion in 2003 (bespoke research for preparation of the strategic development plan of Siauliai region. Head of Research Prof. J. Ruškus, research team: assistant prof. Dr. A. Blinstrubas, research fellowship S. Balčiūnas, lecturer Ph.D. student R. Tijūnaitienė, Master of Management and Business E. Petukienė) and in the repeated research, which was carried out in 2005 (Heads of research – the authors of this article, research team - R. Petrauskaitė, R. Tijūnaitis). The goals of development, presented in the preliminary variant of the strategic development plan of Siauliai County (18 April, 2003) composed the basis of the questionnaire. In total 68 tasks were presented in the questionnaire. The tasks reflected one of four priorities of the region. They were rated as the areas of each of four development sectors. **The goal of the survey** was to reveal the structure and expression of dwellers' opinion and changes in 2005 compared to 2003, related to the upturn of socioeconomic situation of the region, to assess the potential influence of dwellers' opinion on the governance of the regional development. 734 respondents (in 2005) and 2265 in 2003 from the city of Siauliai

and Siauliai, Joniskis, Radviliskis, Kelme, Pakruojis and Akmenė districts participated in a standardised questionnaire survey.

Descriptive statistics was used for data processing: the ratings of answers were counted calculating an arithmetic mean of every answer (M); standard deviation was calculated for the purpose to check the level of homogeneity of opinion (SD), besides, the distribution of answers according to the percentage was calculated (%). Kruskal Wallis test was used as an additional test, which helped define the degree of significance of the opinion of respondents from different socio-demographic groups (significance threshold chosen  $p < 0.01$ ). SPSS - 11.0 software was used for data processing.

The results of the survey in 2003 did not elate. According to Ruškus (2003), the civil democratic attributes of social life of the country were devalued: the dwellers estimated women participation in political and economic life, the activities of non-governmental organisations, the integration of former prisoners into social life and the research of dwellers' social needs as non-underlying, of secondary importance. We would treat this fact as a certain disregard for the necessity of social equality, public solidarity, and the lack of public consciousness.

**The aim of this article** is to analyse how the opinions of Siauliai dwellers on assessment of individual sectors as well as their activity have changed in 2005 compared to 2003 with the changes in socio-economic climate of the region, to reveal the structure, expression and changes of dwellers opinion in 2005 compared to 2003, related to the upturn of socioeconomic situation of the region.

#### **The analysis of the results of the survey of Siauliai region dwellers**

The data of the survey illustrating the assessment of the state of social and economic infrastructure, human resource, production and service, agricultural, rural and fishery sectors in the development of Siauliai region allow to set the rating, from which one can see that in 2003 the respondents assessed the state of the Hill of Crosses higher (than other areas), and the establishment of new work places was assessed most poorly. In our opinion such a high position of the assessment of the Hill of Crosses in the rating could be determined by the fact that Siauliai dwellers identified this object as one of the strategic objects of

tourist attraction, therefore when evaluating its environment and infrastructure they were thinking not about the state of the roads, the possibility for tourists to use additional services and the arrangement of the territory, but about its necessity and importance for the region. However, the attitude of the respondents towards the state of the Hill of Crosses has changed in 2005, and the assessment rating is even 48<sup>th</sup> (from 68), which means that its state is ranked as quite bad. During the repeated research the respondents assessed the quality of drinking water to be the best and the adaptability of rural areas for business development the worst. The latter area was assessed as one of the worst in 2003 as well. In the sector of human resource development the area of science and study at Siauliai University is assessed better, and the employment of former prisoners, their integration into social life is assessed as the worst. Such distribution of answers could be influenced by the fact, that according to the age criterion a large part of the respondents are quite young (15 - 35 years old – 35.6 per cent) and of middle age (36 – 49 years old – 46.4 per cent), who probably have children, attending school, and they associate their future with the regional university; besides, it is important to note, that the image of Siauliai University is constantly improving in the society. The repeated research has shown that the respondents assess youth occupation (which in 2003 was assessed quite badly) the best and they assess activities of non-governmental organisations the worst. One can notice a marked difference in opinions about the exploitation of facilities of Siauliai Zokniai airport. In 2003 the dwellers of the region assessed this area critically, but in 2005 they were quite well-affected. In our opinion this change was determined by joining the NATO and the correspondence of Zokniai airport to the needs of this organisation. The airport was chosen as the most suitable to dispose the NATO fighters, guarding the airspace of the Baltic. When the first NATO fighters landed in Zokniai airport, not only the airport repair work accelerated, but also the city of Siauliai started counting economic benefit. Notably, never before Siauliai had been mentioned in the foreign mass media so often. Recently the broadcasts on the fighters disposed in Zokniai airport were prepared not only by the biggest Russian TV channels, but also by the journalists of Finland, Germany, Latvia and other countries.

In the context of the development of agriculture the area of training and consulting of farmers in 2003 is assessed more favourably (in the aspect of other areas). It is in the fifteenth position (of 68) of the rating. In our opinion, this distribution could be determined by the respondents, who live in the villages and small towns, the amount of which reached 48 per cent of all the respondents, who are relatively closer and most related to the agricultural businesses, therefore they know the number and content of the training. Meanwhile in 2005 the most favourably estimated area of agricultural sector is found only in the 49<sup>th</sup> position of the rating. This is the modernisation of milk, meat and other agricultural production processing enterprises. The opinion of respondents about the areas of agricultural sector became more critical after 2 years.

Comparing percentage distribution of assessment of different areas one can notice, that both in 2003 and in 2005 the respondents assess different areas rather negatively and on the average, and the assessment “good” relates only to a very low percentage. One can also notice that in 2005 there are more people, who know the problems of the region, as there are notably less answers “I don’t know” than in 2003. This shows that the dwellers are more interested in different questions of the economic sectors of the region and they are better informed about them.

With reference to the opinions of the dwellers of Siauliai County in the aspect of the demand for investment in the development of sector areas in the region, it is possible to distinguish the areas of social life, which in dwellers’ opinion more or less require investment. The opinion of the respondents about the area, which requires most resources, has not changed. It is the mitigation of unemployment. Although the rate of unemployment in Siauliai County is rapidly decreasing, it remains a relevant problem of social life. The unemployment rate determines social/economic problems of dwellers; therefore it is natural, that the expectations for the better future were reflected in the survey. Thus, we can assume that the dwellers of Siauliai region are partly concerned about the future of the region, associate their future with the future of the region through creation of new workplaces and the reduction of the unemployment rate. While the area, which required less investment in 2003 was the environment of the Hill of Crosses, in 2005 it was the regard to dwellers’

opinion solving the problems of the city. We think, that the dwellers can imagine rather primitively that "keeping the years open" costs nothing, but this process involves not only physical listening, but the creation of the whole system, comprising not only technical and technological means, but also new methods and means, used to record, process and interpret the dwellers' opinion. The dwellers do not consider this area to be expensive, i.e., requiring a lot of resources, however, the regard to dwellers' opinion is in fact one of the ways of involvement in solving the problems of regional development. Incidentally, as the experience of foreign countries shows, in contrast to the associations of the dwellers of Siauliai region this area requires considerable investment. For example, it is estimated that every adult citizen of Denmark could participate in the governance of the country for at least one year. For that purpose every year on 1 January they should elect an Electronic Chamber of 70,000 members in a lottery. During this year they should vote on about 1,000 decisions, discussed by the Parliament of Denmark. Total expenditure for this improvement of the political system of Denmark would amount to 2.5 per cent of the annual budget of the country (Hansen, 1999).

In 2003 in the sector of infrastructure it was suggested to allocate most resources for the improvement of the quality of health services, and in 2005 this area is in the 54<sup>th</sup> position of the rating. In the repeated research respondents suggest to allocate more resources for the develop-

ment of the infrastructure of the Hill of Crosses. During the repeated research the dwellers' opinion about the demand of the areas of the sector of industry and business for resources have changed very little; the priority is given to the attractiveness of the city to local and foreign investment and to the support of business development by municipalities. In our opinion, this fact also reflects the coherence of personal expectations of the dwellers and the future of the whole region. In the sector of human resources in 2005 more resources than in 2003 are suggested to be allocated to women participation in political and economic life. This change in opinions is positive, as it is important for the women to join the decision-making processes, and thus to ensure that women values, concerns and life experience is taken into account in decision-making. It is obvious, that not every woman would defend women's topics, but the fact is that most of those defending the balance of genders are women. Moreover, the experience shows that the changes take place much faster and more effectively in those countries, where more women participate in decision-making.

When comparing both the data of the survey of 2003 and 2005 one can envisage the following trends: the more critically the dwellers assess the sectors and their areas, the more they identify them as requiring more investment. And vice versa, the more favourably the dwellers assess the state of the areas of social life, the more critically they assess potential investment.

Table 1

**The comparison between the assessments of the state of Siauliai County development sectors (in 2003 and 2005)**

The explanation of abbreviations: RN – rating number, M – the mean of the estimators of the scale (the range of the estimators of the scale from 1 (assess badly) to 3 (assess well); the higher M is, the more favourable the assessment is, the less M is, the more critical the assessment is), SD – standard deviation, which shows the level of homogeneity of opinions (the greater it is, the less homogeneous the opinion is)

| The survey of Siauliai County dwellers<br>(N=2265) 2003 |                                    |      |      | The survey of Siauliai County dwellers<br>(N=734) 2005 |                                                |      |      |
|---------------------------------------------------------|------------------------------------|------|------|--------------------------------------------------------|------------------------------------------------|------|------|
| RN                                                      | Areas                              | M    | SD   | RN                                                     | Areas                                          | M    | SD   |
| 1                                                       | Social and economic infrastructure | 1,67 | 0,23 | 1                                                      | Production and business                        | 1,81 | 0,26 |
| 2                                                       | Human resource                     | 1,66 | 0,27 | 2                                                      | Human resource                                 | 1,74 | 0,23 |
| 3                                                       | Production and business            | 1,62 | 0,31 | 3                                                      | Social and economic infrastructure             | 1,72 | 0,21 |
| 4                                                       | Agricultural, rural and fishery    | 1,48 | 0,32 | 4                                                      | Assessment of the state of agricultural sector | 1,68 | 0,31 |

Šaltinis: sudaryta straipsnio autorių.

The generalised data on the assessment of the state of individual sectors of regional development is presented in Tables 1 and 2.

According to the rating of sector assessment, in 2005 compared to 2003 production and business have “swapped places” with the sector of social and economic infrastructure. In our opinion this change was influenced by rapid development of production and business in Siauliai region, especially in the city of Siauliai. Similar to 2003, in 2005 agricultural, rural and fishery sector is assessed critically. However, if we look at percentage distribution of assessment we see that the respondents assess all the areas better than in 2003. In dwellers' assessment agriculture, being the weakest, should be the most supported and developed sector. This distribution is probably influenced by the fact, that during the primary survey a very active agitation for European integration took place in Lithuania. Then agriculture was presented as the area, which required most investment and would get the resources from the funds of the European Union; and having joined the European Union the received support for the development of agricultural area was constantly emphasised. The opinion of the respondents about the demand for investment in the sector of human resources did not change. It is in the last place of the rating.

Both in 2003 and 2005 agriculture in regions is the sector, to which most resources should be allocated. Factor analysis was carried out both with the data of 2003 and with the data of 2005. It is necessary for logical reasoning of scales, i.e.,

to distinguish the scales, which are attributed by respondents to one category. In this case certain common factors of some sector areas are found and related, however, it does not always mean that there is no any notional relationship between those variables.

The factor analysis has shown that the respondents differentiate the factors of the development areas of social and economic infrastructure of the region. The economic meaning and the name of the factor are directly determined by economic content of those indicators, to which it has the greatest loads (Martišius, Vaičiūnas, 2001). In 2003 and 2005 different factors of social and economic infrastructure are brought under generalised categories with similar specific attributes. According to the data of the factor analysis the ratings of the assessment of the state of regional development areas and their demand for investment were compiled. The ratings of 2003 and 2005 show that in 2003 the state of the area of higher education and vocational training, the sector of tourism, landscape conservation were estimated as the best, while the areas of agricultural sector: competitiveness, modernisation of farms and cooperation, specialisation of farms are in the lowest positions of the rating. The activities of municipality as the coordinator of social partnership are estimated critically as well. In 2005 the state of higher education and studies was estimated as the best, and activities of municipality as the coordinator of social partnership were estimated the most critically.

Table 2

**The comparison between the assessments of demand for investment in the development sector of Siauliai County (in 2003 and 2005)**

| 2003 *                                             |                                                           |      |      | 2005                                              |                                                           |      |      |
|----------------------------------------------------|-----------------------------------------------------------|------|------|---------------------------------------------------|-----------------------------------------------------------|------|------|
| The survey of Siauliai County dwellers<br>(N=2265) |                                                           |      |      | The survey of Siauliai County dwellers<br>(N=734) |                                                           |      |      |
| RN                                                 | Areas                                                     | M    | SD   | RN                                                | Areas                                                     | M    | SD   |
| 1                                                  | The demand for investment in agricultural sector          | 2,33 | 0,48 | 1                                                 | The demand for investment in agricultural sector          | 2,25 | 0,44 |
| 2                                                  | The demand for investment in industry and business        | 2,21 | 0,46 | 2                                                 | The demand for investment in the sector of infrastructure | 2,21 | 0,32 |
| 3                                                  | The demand for investment in the sector of infrastructure | 2,12 | 0,37 | 3                                                 | The demand for investment in industry and business        | 2,14 | 0,39 |
| 4                                                  | The demand for investment in human resource sector        | 2,08 | 0,44 | 4                                                 | The demand for investment in human resource sector        | 2,12 | 0,37 |

Šaltinis: sudaryta straipsnio autorių.

Table 3

**Statistically significant differences between both researches evaluating the state and the demand for investment**

| Sector                  | Assessment of state |      | Demand for investment |        |
|-------------------------|---------------------|------|-----------------------|--------|
|                         | Sig.                | MD   | Sig.                  | MD     |
| Infrastructure          | 0.00                | 0.05 | 0.00                  | 0.09   |
| Human resources         | 0.00                | 0.07 | 0.21                  | 0.04   |
| Production and business | 0.00                | 0.19 | 0.01                  | - 0.06 |
| Agriculture             | 0.00                | 0.20 | 0.01                  | -0.08  |

Šaltinis: sudaryta straipsnio autorių.

Table 4

**Statistically significant differences between both researches according to the regions evaluating the state of all sectors**

| The districts of Siauliai region, between which there is a statistically significant difference |                    | Sig. | MD   |
|-------------------------------------------------------------------------------------------------|--------------------|------|------|
| Siauliai city                                                                                   | Siauliai district  | 0.04 | 0.12 |
|                                                                                                 | Akmene district    | 0.00 | 0.21 |
| Siauliai district                                                                               | Siauliai city      | 0.04 | 0.12 |
|                                                                                                 | Joniskis district  | 0.02 | 0.14 |
| Akmene district                                                                                 | Siauliai city      | 0.00 | 0.21 |
|                                                                                                 | Kelme district     | 0.00 | 0.17 |
|                                                                                                 | Pakruojis district | 0.03 | 0.16 |
|                                                                                                 | Joniskis district  | 0.00 | 0.23 |
| Kelme district                                                                                  | Akmene district    | 0.00 | 0.17 |
| Pakruojis district                                                                              | Akmene district    | 0.03 | 0.16 |
| Joniskis district                                                                               | Siauliai district  | 0.26 | 0.14 |
|                                                                                                 | Akmene district    | 0.00 | 0.23 |

Šaltinis: sudaryta straipsnio autorių.

In Tables 3 and 4 statistically significant differences between the researches of 2003 and 2005 are presented.

Using One – Sample t Test, statistically significant differences between the data of the researches of 2003 and 2005 were determined ( $p < 0.05$ ). There are meaningful differences in assessment of the state of all the sectors; however, there are no statistically significant differences in the assessment of human resource demand for investment between 2003 and 2005.

In Table 4 the results of ANOVA Test illustrate the differences between several groups, i.e., not only general differences between two groups (the dwellers surveyed in 2003 and 2005), but also the differences between the nests in terms of the territory, i.e., between the first and the second

surveys of Siauliai city and Siauliai region. Thus, as we can see in Table 4, there are differences between the opinions of Siauliai city respondents and the opinions of the respondents of Siauliai district and Akmene district. However, as there are no other Siauliai districts in the analysis of the first sub-group, i.e., the situation based on the opinions of Siauliai city respondents in this table, we can conclude that there are no statistically significant differences between Siauliai City and Joniskis, Kelme, Akmene, and Pakruojis districts.

In summary we can state that both in 2005 and 2003 agriculture remains the most critically assessed and most supported sector. In 2005 unlike in 2003 the sector of industry and business is assessed most favourably. During the repeated survey the respondents assessed all sector areas more

favourably than during the previous survey. During the first survey the negative opinion about the state of different sectors prevailed, while in 2005 the respondents tended to assess almost all the areas as average. Both in 2003 and 2005 the respondents assessed the sectors of development more critically, as more resources were suggested to be allocated there. And vice versa, the more favourably the respondents assessed the state of different sectors, the more critical they were about the potential investment in those sectors. There are essential differences in the assessment of the state of all the sectors; however, there are no statistically significant differences in assessment of the demand of human resources for investment in 2003 and 2005. The biggest differences are noticed when comparing the opinions of the dwellers of Akmene district with the opinions of the dwellers of other districts.

In our opinion the results of the research in many cases depend on subjective assessments, especially on how the dwellers assess the change of their own situation in the context of the social and economic reforms, which have taken place during the period of independent Lithuania. Part of the respondents' answers, when most areas were assessed as equal, i.e., on average, show that the dwellers do not have civic competences yet, they do not think that their answers would be regarded. Partly this shows the dwellers' indifference to the participation in the developmental process of their own region. It was noticed that the dwellers of rural areas answered "I don't know" to many questions, which are important to city dwellers, as well as the dwellers of towns did not have the opinion about the areas concerned with the village. The aim of this research was concerned with the questions important for the entire region, therefore the dwellers' inability "to see beyond their yard" partly shows some indifference to involvement in the governance of regions.

## Conclusions

As the results of the repeated research show, the dwellers' assessments of social and economic infrastructure, human resource, industry and business and agricultural, rural and fishery sectors are better in 2005 compared to 2003. We can presume that such changes were influenced by the development of regional economy. Statistical socio-economic indicators show that the economic situation in Siauliai region is rapidly improving.

There are significant differences in the assess-

ment of the state of all the sectors; however, there are no statistically significant differences in the assessment of the demand of human resources for investment in 2003 and 2005. The biggest meaningful differences are noticed when comparing the opinions of the dwellers of Akmene district with the opinions of other district dwellers.

The prevailing homogeneous dwellers' opinion about different questions of sector areas, i.e., when the majority of dwellers assess all the areas similarly, shows the indifference of the citizens to participation in the governance of regions.

## Siūlymai

*Norint išsiaiškinti visuomenės nuomonę įvairiais ūkio sektorių klausimais su tikslu integruoti apklausos rezultatus į su regiono valdymu susijusių sprendimų priėmimą, siūlome suformuoti reprezentacinę apklausimųjų imtį. Nors atlikto tyrimo anketos validumas buvo pagrįstas, tačiau pastebėta, kad respondentai neturi reikiamos kompetencijos tyrėjus dominančiais klausimais.*

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## Alternative View on Economic Regions in Latvia

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### Introduction

With the development of macroeconomic and microeconomic theories in modern economics the problems of regional economy become more urgent. In scientific literature there is an opinion that these are regions (not the whole state itself), which become the subjects of competition under the conditions of modern economy globalisation.<sup>1</sup>

In this connection, and especially because of the fact, that the concept of “region” is difficult to be defined, economists (especially economists-regionalists) are more interested in the question of understanding the concept of “region” exactly from the economic aspect, because the further development of the theory of regional economics and the direction and content of the state regional economic policy depend on a region.

That is why the **aim** of this research is to study the economic aspect of the objective regionalization process (not regional reform) in Latvia.

The following **tasks** are planned in order to reach the aim:

- to observe the development of regional direction and formation of regional economics in the world’s general economic theory;
- to give methodologic grounds for investigating the process of regionalisation in Latvia exactly from the economic aspect;
- to carry out an original empiric research in order to find out the number of the economic regions of Latvia and to state what they are.

The following scientific methods are used in the investigation:

1. to study the theory – monographic or descriptive method;
2. to choose a methodology – analysis and synthesis;

3. to carry out an independent investigation – comparative method of the economic importance of a territory (to bring forward the hypothesis), cluster analysis (to proof the hypothesis) and cartographic method (to check the hypothesis and define it more precisely).

The sources of information are: scientific economic literature and the official regional economic statistics of the Republic of Latvia.

Each part of this article is dedicated to the realization of one of the three tasks of the research.

### The Origin of Regional Direction and Its Development in Economic Theory

The conditions of the origin of a regional problem and its development in economic theory are the following:

■ **the conditions of the origin** – the idea of classic economists about territorial division of labour, in the result of which territories become the bearers of economic interest or, in other words, they become economic subjects;

■ **the conditions of the development** – modern economy globalisation, in the result of which regions were formed, first of all, as a mechanism of the preservation of social identity.

The 60s of the 20th century are treated as the final period the formation of regional science, when Regional Science Association was established in the USA, which was founded and run by W. Isard, American scientist. The foundation of this organisation and its work may be treated as a part of institutionalisation of regional science and as the condition of further significant development.

Modern development of regional economics happens in two main directions:

1. extension of the content (the subject);
2. strengthening of the methodology of investigation.

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<sup>1</sup> И. Кононов. Социология и проблемы пространственной организации общества. – Социология: теория, методы, маркетинг. 2004, N 4 – pp. 60 - 61

The theoretic investigations of regional economy are realised, mainly, in four main directions:

- region new paradigms and concepts;
- activity distribution;
- organization of spatial economics;
- inter-regional cooperation.

### **Methodologic Basis of the Investigation of the Economic Aspect of Latvian Objective Regionalisation Process**

The analysis of scientific economic heritage allows to form a methodologic basis of the economic aspect of Latvian regionalisation, which is based on the following theories:

- the theory of agricultural standort by J.Thunen (idea that within the state limits there is a central city [or cities – *the author's remark*], which is the only seller's market of agricultural output and a source of industrial goods, as well as a postulate that the longer there is the distance from the city, the less there is intensity of agriculture;

- the theory of central places by W.Christaller (idea about economic central places, which provide goods and services not only to themselves, but also to the population of their neighbourhood (seller's market). According to this theory, the zones of services and sale in the course of time tend to take the shape of regular hexagons (honey bee combs), and all the populated territory is covered with overlapping hexagons (Christaller's lattice). Because of this, the average distance to the seller's market or to the central places to get goods or services is minimal;

- the theory of absolute and comparative advantages by A. Smith and D. Ricardo (idea about territorial division of labour and economic benefit of goods exchange);

- the theory of international (inter-regional) division of labour by E.Heckscher and B.Ohlin (postulate about an effective use of the resources of regional industry producing the goods, which become more profitable, when being co-produced with these resources or when these resources are moved into another region within the state);

- the theory by A.Losch about spatial organisation of economy (conception of an economic region, which explains an economic region as a market with its boundaries, which are caused by inter-regional competition; methodologic ap-

proach to the appropriate role of the economic determinants of territorial division of labour - the effect of industry concentration and transport payment).

The theory of inter-regional economic co-operation, which may become a methodologic basis of the study of the economic aspect of Latvian objective regionalisation process, was chosen from the majority of modern scientific economic theories. The models of economic balance of a multiregional system can be borrowed from this theory. Generally speaking, these models can be equated with the models of microeconomic theory – a curve of production possibilities, changing the changeable system, substituting economic spheres (or produced goods, which are used for the model description in microeconomic theory) for economic regions.

### **Definition of Latvian Economic Regions and Their Identification (empiric investigation)**

***The problem of the investigation:*** at present Latvian regional economic policy is directed to the regions, the boundaries and specific differences (especially the economic ones) of which are not clearly defined (in the map of Latvia there are both statistic and planned regions, which can not be treated as the objects of regional economic sciences, because this division does not have economic basis). At the same time, regional economics is interested, first of all, in direct economic regions as specific subsystems of Latvian economy. At the present moment, direct economic regions are neither scientifically grounded, nor defined and identified in Latvia.

***The aim of the investigation:*** to define and identify economic regions in Latvia.

The tasks of the investigation:

1) to precisely define the number of economic regions in Latvia;

2) to systematically describe or identify every economic region in Latvia.

***The object of the investigation:*** 26 regions and 7 towns in the republic as territorial units, from which the regions are formed.

***The subject of the investigation:*** the indices of the economic development of 26 regions and 7 towns in the republic, which characterise both the economic importance of a corresponding territory (its contribution into the economy) and an economic specific character of the territory.

**Definition of the main concepts****The origin and essence of the concept “region”**

The word “region” comes from the Latin language (from the stem *regio*), and it is translated as “state, district, area”<sup>2</sup>.

The basis of a region as a scientific concept and its physical form is geo-area<sup>3</sup> - a limited part of land, which is characterised by a definite peculiarity or total sum of peculiarities. According to its essence the concept “region” presupposes a single object, which is separated from the whole, i.e. taking into consideration definite criteria of classification.

On the whole, in science the concept “region” is understood as a part of geo-area with the whole complex of nature, socially-economic, national, cultural and other conditions. But each sphere of science differentiates this or that factor of region formation. That is why in these spheres of science “regions” stand for quite different (separate) objects.

The term “region”, which is used in scientific literature, is characterised by polysemy. Its content depends on the actualising of a concrete living aspect in this or that science.

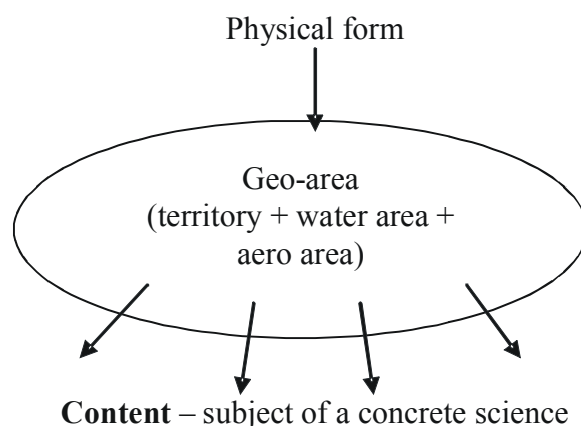
**The concept of economic region**

Solving the problem of the object and subject of regional economics, first of all, it is necessary to find the answer on the question: which of the two principal alternatives – economic region or economy of a region – form the basis of the system of the object and subject of regional economics. The author considers that the second alternative – economy of a region – can not be the object of regional economics, because in this case it is not quite clear: the economy of what kind of a region? Is it political region? Is it ethnographical region? Is it statistical region?

It is obvious, that the object of regional economics is an economic region, which should be

Table 1<sup>4</sup>**Examples of the mechanism of region definition**

| Basic criterion   | Region                                   |
|-------------------|------------------------------------------|
| Climate           | geo-area with specific climate           |
| Area              | geo-area of a certain area               |
| Culture           | geo-area with specific culture           |
| Living conditions | geo-area with specific living conditions |

**Fig. 1<sup>5</sup> The essence of the concept “region”**

<sup>2</sup> А.Г. Гранберг. Основы региональной экономики. Издательский дом ГУ ВШЭ, Москва, 2004 – pp. 16.

<sup>3</sup> The term “geo-are” is such a kind of a concept that unites the concept of territory (limited part of dry land), area of water (limited part of Earth water) and aerodrome limits (part of Earth air). [Гранберг, с.15].

<sup>4</sup> Autores veidota tabula; ideja tiek ņemta no: *Экономика региона (Под ред. В.И.Борисевича)* – Минск, БГЭУ, 2002

<sup>5</sup> The scheme is created by the author

defined precisely, because in any science the final result of its investigation should be clear. Using the mechanism of region definition (it is observed in the Table 2), which studies a region as a single object that is separated from the whole, it is possible to observe the logical way of economical region definition: an economic region is a part of state geo-area with specific economy. So, the essence of the reproduction process of the integral system can be considered as the main peculiarity of an economic region.

As a result it is possible to differentiate several theoretically common definitions of an economic region, which reflect the essence of the concept:

- Economic region is a part of state economy in a particular territory, which is characterised by special economically geographic location, economic unity of the whole territory, peculiarity of the conditions of economy and nature, historically formed production specialisation, in the basis of which there is territorial labour division.<sup>6</sup>

- Economic region is an economic part of a state with territorial specialisation, which is characterised by the integrity of production process and integrity.<sup>7</sup>

- Economic region is not only a subsystem of the state socially-economic complex; an independent part of it with an integral reproduction cycle, special forms of the display stages of the reproduction, specific features of social and economic processes course should be mentioned here.<sup>8</sup>

Generally speaking, all the definitions of the concept “economical region” reflect the essence of the concept; they differ only by bigger or smaller recognition of social parts in economic region.

Therefore, an economic region is the main object of the science of regional economics, which can be defined enough precisely as a part of economy – a complete system of production, which definitely works in the state common economic environment, but, still, has its own specific character. First of all, an economic region is a spatial<sup>9</sup> part of economy (not the one of policy, administration, ethnography).

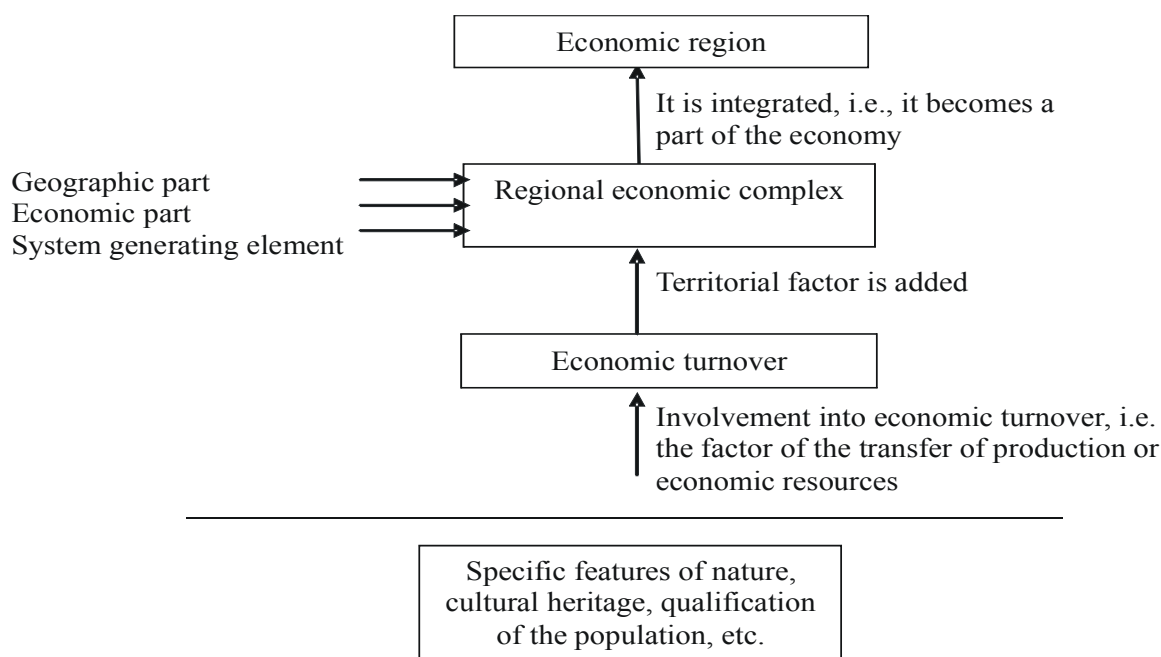


Fig. 2<sup>10</sup> **Mechanism of the formation of economic region**

<sup>6</sup> Экономика региона (Под ред. В.И.Борисевича) – Минск, БГЭУ, 2002 – pp. 16

<sup>7</sup> Добрынин А.И. Региональные пропорции воспроизводства. – Л., 1977 – pp. 9

<sup>8</sup> Маршалова А.С., Новоселов А.С. Основы теории регионального воспроизводства. – М., Экономика - 1988

<sup>9</sup> Ekonomiskās telpas jēdziens tiek dziļi analizēts A. Granberga grāmatā „Reģionālās ekonomikas pamati” (2004).

<sup>10</sup> The scheme is created by the author; the ideas are borrowed from: Экономика региона (Под ред. В.И.Борисевича) – Минск, БГЭУ, 2002

***The formation of economic regions***

Economic region becomes the historic result of social maintenance of the nature reality. This maintenance happens on a concrete land allotment, the transfer of physic space into economic inner one.

*The main pre-condition* – the objectivity of this process.

*Starting mechanism of economic region formation* – free competition among the producers of goods.

*Basic criterion of economic region defining* – specialisation in the system of territorial labour division.

*General characteristics of economic region* – each region has its own economic specialisation.

***Methods of the investigation:*** In order to define and identify economic regions in Latvia, 3 methods were used.

The methods for defining of Latvian economic regions are divided in order to reach the tasks of the investigation:

1. Introductory method is used to study the object of the investigation and to bring forward the hypothesis. Comparative method of the economic importance of territories was chosen as an introductory method, because it does not have proper scientific grounds, but is based on official statistic data, and it allows to describe the object of the investigation systematically and bring forward the hypothesis.

2. Basic method is used in order to prove the hypothesis of the investigation. Cluster analysis is used to reach this goal. The analysis makes natural groupings among the objects of the investigation. This method is widely used in various scientific investigations and is grounded in details.

3. Additional method is used to approve and precise the hypothesis. Cartographic method is used as an additional method. It helps to process the data on the location of the property of 500 Latvian millionaires (production, lands, apartments) in the territory of Latvia. As far this information is not official, it can not be used as the

1. Introductory method, which brings forward the hypothesis

Comparative method of the economic importance of the territories

Theoretic ground: economic region is an economically important physical space  
Source of information: CSB data



2. Basic method, which proves the hypothesis

Cluster analysis

Theoretic ground: economic region is a cluster of territorial unit with similar indices of economical development  
Source of information: CSB data



3. Additional method, which defines the hypothesis more precisely

Cartographic method

Theoretic ground: economic region is a territory, where the property of a special kind is concentrated  
Source of information: the property of 500 millionaires, which is indicated in Latvian list of millionaires<sup>12</sup>

Fig. 3<sup>11</sup> **The Structure of the method of defining Latvian economic regions**

<sup>11</sup> The scheme is created by the author

<sup>12</sup> L. Lapsa, K. Jančevska. Latvijas miljonāru noslēpumi. – Rīga, „ATĒNA”, 2005, pp. 231 - 417

grounds of a scientific investigation. That is why this method is an additional one.

***The systemic description of the object of the investigation***

5 statistical regions (which include 26 Latvian areas and 7 republican towns, i.e. the objects of

the given investigation) are the objects of the present investigation. These regions appear officially in the statistics of the Republic of Latvia. The basic indices of economic development are taken as a criterion for their classification; they are used in the statistics of the Republic of Latvia, as well. That is why it is possible to compare the

Table 2

**Previous definition of Latvian economic regions by means of comparative method of the economic importance of the territories**

| <i>Economic indices</i>                                     | <i>Latvian regions</i> | <i>Statistic regions</i> |             | <i>Economic regions</i> |             |
|-------------------------------------------------------------|------------------------|--------------------------|-------------|-------------------------|-------------|
|                                                             |                        | 1996                     | 2002        | 1996                    | 2002        |
| <b>Gross domestic product</b>                               | Region of Riga         | 54%                      | 64%         | 54%                     | 64%         |
|                                                             | Region of Vidzeme      | 10%                      | 9%          | 46%                     | 36%         |
|                                                             | Region of Kurzeme      | 15%                      | 11%         |                         |             |
|                                                             | Region of Zemgale      | 10%                      | 8%          |                         |             |
|                                                             | Region of Latgale      | 11%                      | 8%          |                         |             |
|                                                             | <b>Total:</b>          | <b>100%</b>              | <b>100%</b> | <b>100%</b>             | <b>100%</b> |
| <b>Total added value</b>                                    | Region of Riga         | 54%                      | 64%         | 54%                     | 64%         |
|                                                             | Region of Vidzeme      | 10%                      | 9%          | 46%                     | 36%         |
|                                                             | Region of Kurzeme      | 15%                      | 11%         |                         |             |
|                                                             | Region of Zemgale      | 11%                      | 8%          |                         |             |
|                                                             | Region of Latgale      | 10%                      | 8%          |                         |             |
|                                                             | <b>Total:</b>          | <b>100%</b>              | <b>100%</b> | <b>100%</b>             | <b>100%</b> |
| <b>The number of permanent residents</b>                    | Region of Riga         | 41%                      | 40%         | 41%                     | 40%         |
|                                                             | Region of Vidzeme      | 15%                      | 15%         | 39%                     | 60%         |
|                                                             | Region of Kurzeme      | 14%                      | 14%         |                         |             |
|                                                             | Region of Zemgale      | 14%                      | 15%         |                         |             |
|                                                             | Region of Latgale      | 16%                      | 16%         |                         |             |
|                                                             | <b>Total:</b>          | <b>100%</b>              | <b>100%</b> | <b>100%</b>             | <b>100%</b> |
| <b>The number of the employed at the main work place</b>    | Region of Riga         | 49%                      | 53%         | 49%                     | 53%         |
|                                                             | Region of Vidzeme      | 12%                      | 11%         | 51%                     | 47%         |
|                                                             | Region of Kurzeme      | 13%                      | 12%         |                         |             |
|                                                             | Region of Zemgale      | 12%                      | 11%         |                         |             |
|                                                             | Region of Latgale      | 14%                      | 13%         |                         |             |
|                                                             | <b>Total:</b>          | <b>100%</b>              | <b>100%</b> | <b>100%</b>             | <b>100%</b> |
| <b>Industrial production output</b>                         | Region of Riga         | 58%                      | 62%         | 58%                     | 62%         |
|                                                             | Region of Vidzeme      | 10%                      | 12%         | 42%                     | 38%         |
|                                                             | Region of Kurzeme      | 12%                      | 11%         |                         |             |
|                                                             | Region of Zemgale      | 8%                       | 9%          |                         |             |
|                                                             | Region of Latgale      | 12%                      | 6%          |                         |             |
|                                                             | <b>Total:</b>          | <b>100%</b>              | <b>100%</b> | <b>100%</b>             | <b>100%</b> |
| <b>Non-financial investments (without private building)</b> | Region of Riga         | 62%                      | 59%         | 62%                     | 59%         |
|                                                             | Region of Vidzeme      | 7%                       | 10%         | 38%                     | 41%         |
|                                                             | Region of Kurzeme      | 17%                      | 13%         |                         |             |
|                                                             | Region of Zemgale      | 8%                       | 10%         |                         |             |
|                                                             | Region of Latgale      | 6%                       | 8%          |                         |             |
|                                                             | <b>Total:</b>          | <b>100%</b>              | <b>100%</b> | <b>100%</b>             | <b>100%</b> |

Source: CSB.

economic importance of the territories in Latvian economy and, as a result, to define real economic regions in our state.

As the results of the used methods show, statistic regions of Latvia can not be called economic regions, because studying them separately it becomes obvious that they are not very important for the economy. Only having joined the four statistic regions – Vidzeme, Kurzeme, Zemgale and Latgale – it becomes possible to compare them with the region of Riga (at least in the economic aspect). Moreover, this situation has continued during 1996-2002, when some of the indices became even more concentrated in the region of Riga (e.g., the gross domestic product and added value produced in the region of Riga have increased for 10% within 6-year period of time). The other indices of economical development, which were analysed, stayed almost the same; it proves the stability of the situation and the significance of the problem.

That is why the description of the system of the object of the investigation allows to bring forward ***the hypothesis***: there are two economic regions in Latvia – the region of Riga and the rest territory of Latvia.

***The hypotheses of the investigation***: there are two economic regions in Latvia - region of Riga and the rest territory of Latvia.

### **The results of the empiric investigation**

In the process of carrying out the empiric investigation, the aim of which was definition and identification of economic regions in Latvia (i.e. to answer the question: how many economic regions are there in Latvia and what they are?), 26 regions and 7 republican towns were studied. They were the object of the investigation as territorial structural units, which could be used for Latvian economic regions formation.

The indices of the development of the regions and the republican towns were treated as the subject of the investigation. They were analysed by means of two methods (comparative method of the economic importance of the territories and cluster analyses). It allowed to bring forward and prove the hypothesis of the investigation, which

was approved and specified with the help of additional method cartographic method (in the map of Latvia the location of the property of 500 Latvian millionaires (production, lands, apartments) is shown with its sharing by the territory of Latvian statistic regions).

The results of the investigation showed that in 2002 Riga and the rest territories of Latvia formed two specific subsystems of the economy: an economic subsystem of modern production, technology and applied services, and an economic subsystem of traditional agricultural tourism. A dynamic analysis (1996-2002), which was carried out within the framework of the investigation, showed that the division into regions, which was worked out in 2002, happened gradually, Ventspils and Daugavpils (which in 1996 could be treated either as a separate economic subsystem of Latvia or as a separate subsystem) lost their economic importance in the economy of Latvia and merged with the rest territory of Latvia. So, it is possible to foretell that this situation even in the future will not be static and some other economic regions outside Riga will appear in Latvia.

The author considers that the existing in Latvia division into regions can not be defined as an economic regional division. A well-known Latvian scientist, doctor of economics, professor Oļģerts Krastiņš call these regions (regions of Riga, Kurzeme, Vidzeme, Zemgale and Latgale) historic areas, noticing that Latvian regional division by all means may have exactly an economic content: “Riga – wages, Latgale – pensions”.<sup>13</sup> The most known Latvian researcher of regional problem, doctor of economics Inese Vaidere noticed as early as 1995 that: “*In Latvia an artificial and deformed economic territorial structure was formed. On the one hand it is characterised by excessive concentration of population and production in the region of Riga, where approximately three-fifths of the able-bodied population of Latvia are employed and almost two thirds of the Latvian production are concentrated, but on the other hand – relatively low density of population, poorly developed production sphere and infrastructure can be found in the rest territory of Latvia*”.<sup>14</sup>

The conductors of the last Latvian regional investigations are also very pessimistic. For example,

<sup>13</sup> O.Krastiņš. Teritoriālā noslāpošanās ir mazāka nekā sociālā. Tomēr liela//Latvijas Vēstnesis, 19.10.2000 (Nr. 368-369)

<sup>14</sup> I.Vaidere. Ekonomikas reģionālās disproporcijas kavē tautsaimniecības attīstību// Labrīt, 8.04.1995 (Nr.84)

doctor of economics, associate professor of School of Business Administration and a group of his co-authors having carried out their investigation devoted to the study of Latvian regional development in 2004 concluded that: *"in Latvia a distinct monocentrism of its capital Riga as a centre still can be observed both quantitatively and qualitatively and it even becomes stronger. ... There is no a single reason to affirm that this situation can be improved being supported by means of financial instruments, which are provided by the European Union"*.<sup>15</sup>

## Ending

Having brought forward and proved the present hypothesis of two economic regions in Latvian economy, the author of the given paper does not aspire to the indisputable rightness of it. But, at the same time, the given hypothesis is sufficiently based on economic theories, and it is proved by economic methodology and a generally-known method of statistic information analysis, which is widely used in economic investigations. With the help of this work the author hoped to activate a scientific discussion on Latvian regional division, taking into consideration exactly an economic aspect (not administrative, politic, ethnographic, etc. ones).

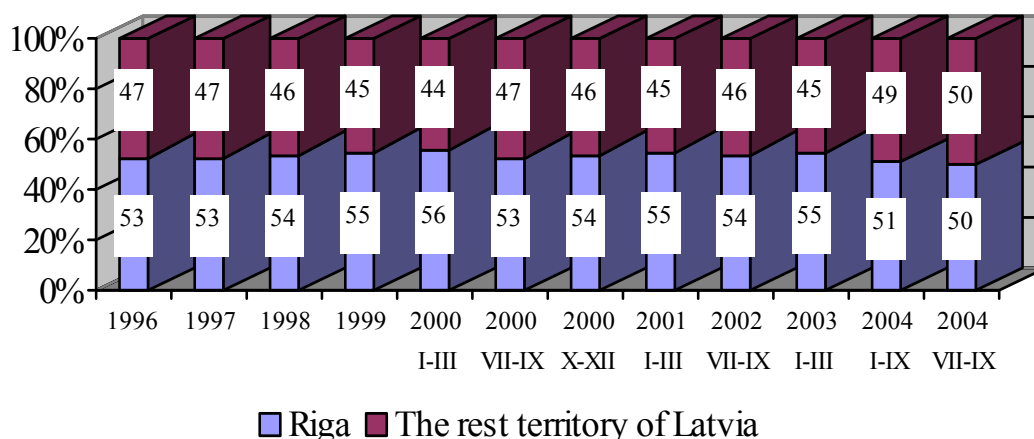
The author believes that after Latvia has joined the EU the boundaries of the economical regions

have been changing gradually. Low land prices and lowered tax rates outside the territory of the city of Riga testify the production outflow from Riga to the other territories of Latvia. The collected statistic data on the specific gravity of industrial production output in the economy of Latvia, which can be found in Box 4, testify the beginning of this process. It is obvious that in 2004 the specific gravity of the industrial production output in Riga began to lessen, moving to other territories in Latvia.

It is obvious, that it is necessary to continue investigating the process of the formation of economic regions in Latvia, because this process is dynamic and, by all means, it should be under the control of regional economic science, because these economic regions (even if their number and content in Latvia may be argued) are the object, which economic sciences on the whole and regional economics in particular are interested in.

## Conclusions

The conditions of the origin of a regional problem and its development in economic theory are the following: the conditions of the origin – the idea of classical economists about territorial division of labour, in the result of which territories become the bearers of economic interest or, in other words, they become economic subjects; the conditions of the development – modern economy



Source: CSB.

Fig. 4 **Industrial production output in Riga and the rest territory of Latvia, 1996-2004, in percentage from the whole industrial production output of Latvia**

<sup>15</sup> S.Keišs. Reģionālās attīstības virzieni un pasākumu sistēma reģionu izveidei Latvijā ES kontekstā.//LZP Ekonomikas un juridiskās zinātnes galvenie pētījumu virzieni 2004. gadā, Nr.10, Rīga, 2005, pp. 73-79

globalisation, in the result of which regions were formed, first of all, as a mechanism of the preservation of social identity.

Modern development of regional economics happens in two main directions: extension of the content (the subject) and strengthening of the methodology of investigation.

The modern theoretic investigations of regional economy are realised, mainly, in four main directions: 1) region new paradigms and concepts; 2) activity distribution; 3) organization of spatial economics; 4) inter-regional cooperation.

The analysis of scientific economic heritage allows to form a methodologic basis of the economical aspect of Latvian regionalisation, which is based on the following theories:

- the theory of agricultural standort by J.Thunen;
- the theory of central points by W.Christaller;
- the theory of absolute and comparative advantages by A. Smith and D. Ricardo;
- the theory of international (inter-regional) division of labour by E.Heckscher and B.Ohlin;
- the theory by A.Losch about spatial organisation of economy.

The identification of the economic regions in Latvia, which existed in 2002, showed that ***Rīga as a subsystem of the economy of Latvia (i.e. its economic region)*** is characterised by:

- huge concentration of industrial production and economic activity at one place of the state territorial division;
- very active use (comparing with the rest territory of Latvia) of new technologies (informative, financial mediation etc.);
- much higher level of material welfare of the population;
- big specific gravity of investments, which was directed to the further development;
- big specific gravity of places in hotels (not in different tourist hostels), which proves active co-operation with foreign countries or development of applied tourism.

At the same time, ***the rest territory of Latvia*** is characterised by:

- big areas of the territory with low density of population;
- all Latvian agricultural zones are located in these territories;
- very low level of information technologies use;

- these are the areas of vocational tourism;
- low level of investments inflow.

The identification of Latvian economic regions showed that the state regional economic policy should be determined by the economic regions, because the centre of modern production and commercial services (Riga) and the traditional countryside and recreation economy (the rest territory of Latvia) develop according to different economic principles.

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## **Courses of Eco-development Preferred by Inhabitants of Opatowiec Municipality in Swietokrzyskie Voivodship (Poland)**

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### ***Abstract***

The area covered by protected areas in Poland amounts to 33.1% and this figure varies as far as single regions are concerned; the region with the highest percentage of areas covered by them is in Swietokrzyskie Voivodship. This Voivodship has a system of protective areas. This system comprises 62% of total areas. There are 72 municipalities in Swietokrzyskie Voivodship among which 49 protected areas cover more than half of the area. These areas are usually landscape parks and protected landscape areas. Opatowiec municipality, covered by protected areas in 96% (Nida Basin Landscape Park and protected landscape areas) is one of these 49 protected areas. Opatowiec municipality is located in Swietokrzyskie Voivodship which has an area of 68 sq. km and a population of 3 691.

The research was conducted among 130 inhabitants who expressed their opinion in questionnaires. This paper presents the courses of development preferred by the inhabitants of Opatowiec municipality in the field of eco-development. The research was based on the inhabitants opinions concerning particular courses of development, i.e. tourism, services, handicraft, industry and small business, folk culture and art, agriculture, food processing, and wildlife protection. Moreover, the inhabitants pointed out the most urgent courses of actions for the local government selecting them from the following list: financial security, health and social welfare, shaping the awareness of social roles, development of municipality economic potential, shaping and protection of environment, shaping of the spatial structure, and safety of inhabitants.

The results show that agriculture (87%), wildlife protection (51%), tourism (38%), services (51%), craft (30%), food processing (65%), and industry (49%) are the most preferred courses of development by the inhabitants in Opatowiec municipality.

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**Key words:** eco-development, rural areas, protected areas, protected landscape area.

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### **Introduction**

The conditions of the development in the protected areas result from the potential of natural resources in this area as well as from the objective conditions shaping their position in the region. Development processes should take place in the atmosphere of social acceptance for the development programme. The role of the local community being a subject in the implementation of strategic goals is based on the evaluation and analysis of inhabitants attitude, their expectations towards the courses of future development and legal conditions specifying action proceedings.

At the end of 2003 spatial forms of nature and landscape preservation constituted 33.1% of the total country area (Rocznik...2004). Landscape parks together with national parks, nature reserves

and protected landscape areas make up the system of protected areas as a set of mutually complementary forms of nature preservation. Because of their specificity, protected areas are subject to particular legal acts which define admissible human activity depending on the level of protection. Landscape parks and protected landscape areas may be nature 'enclaves' of eco-development when we preserve the basic rules of nature conservation according to their particular legal acts. The eco-development of particular spatial systems means durable development, the one of which is ecologically, economically, socially and technologically balanced (Łojewski S. 1998). According to the Global Programme of Action of the so-called AGENDA 21 constituting the document of International Conference in Rio de Janeiro in 1992 every municipality (gmina) should elaborate its

own local programme of eco-development (Koreleski K. ...1998). It shall contain directives for the development of the local plan of land cultivation specifying the main assumptions for the local and investment policy. The advance and nationalisation of the AGENDA 21 process is varied, because it includes environmental policy, eco-development strategies producing socio-economic policy and diverse spatial policy (Borys T. 1999).

This paper aims at presenting courses of eco-development favoured by the inhabitants of Opatowiec municipality in Swietokrzyskie Voivodship in Poland, 100% of which is situated in Nida Basin Landscape Park and Koszycko-Opatowiecki Protected Landscape Area.

## Results and discussion

The research composed of setting the courses for the development of protected areas in Swietokrzyskie Voivodship include, among others, recognising nature and landscape value of protected areas in Swietokrzyskie Voivodship. This research has been carried out since 1998. The stock-taking of environment components was limited to basic factors conditioning multifunctional and balanced development of rural areas and agriculture, i.e., identification of soils, identification of water and soil conditions and plant cover.

The paper is based on personal research, in particular: survey results, meetings with Opatowiec authorities and inhabitants which concerned the development of the area. The surveys were prepared so as to show the prospects of the protected areas development. People with different levels of education have participated in it, mainly including people considered as leaders according to the notion presented by Siekierski (2004) and Zawisza & Pilarska (2003) who claimed that mainly such people set the courses of development actions within a particular rural community.

The number of questionnaires addressed directly to inhabitants was 220, out of which 125 were filled in and 108 were analysed. In the group of questioned inhabitants 56 were women, and 52 men filled in the questionnaire. 24.8% of respondents had vocational education, 46.7% - secondary education, 27.6% - higher education, the others had elementary education. The respondents were mainly white-collar workers (32.3%) and

farmers (33.3%). The survey carried out concerned: favoured courses of development of the research area, ecological awareness, possibility of maintaining agricultural and tourist activity, problems of everyday life hindering the development, some demographic aspects, development chances, and obstacles. Statistical data and materials obtained from the gmina – mainly the local plan for bringing land into cultivation – constituted a supplementary element of the research. Opatowiec is a typical rural gmina in Swietokrzyskie Voivodship with a total area of 68 sq km, inhabited by 3 691 people and a population density of 54.0 (population is “- 11.1%”). The length of the water supply network is 52.9 km and the length of the sewage system is 1 km. There are 134 business entities according to the Polish Classification of Activity (PKD). The outlay of the water management has amounted to the total of PLN 1. 640. 300 which were spent in 2003. The total surface of soils is 5 479 ha, where the land area amounts to 5 025 ha and the arable land comprises 4 175 ha. There are 2 155 heads of cattle and 8 025 heads of swine.

### Courses of development of the Opatowiec in the opinion of its inhabitants

Taking into consideration external factors a question about the institutions influence on the development of gmina was asked. The opinion of respondents is as follows: the most favourable influence is exerted by the gmina local government units (51.9%) and agricultural consulting centres (33.3%). Such organisations as political parties (39.2%) and trade unions (36.7%) have a negative influence on the situation. Among all respondents only 23.1% are conscious of the fact that they live in a protected area.

The gmina inhabitants are indifferent to certain social issues, particularly concerning the following: organisational abilities (56.6%), enterprise (65.7%), and the authorities' initiative (52.8%). 49.0% of respondents believe also that the gmina inhabitants do not care for the aesthetics of their surroundings. It should be stressed that 52.4% of respondents believe that the gmina inhabitants are diligent and persistent (although 36.9% believe this feature to be irrelevant).

As far as the influence of spatial structure on the gmina development is concerned 71.3% of respondents stated that location of the region (51.4%) and availability of areas (46.7%) have a

positive influence. While 53.7% of the respondents stated that the gmina settlement (50.5%) and spatial diversity (60.0%) have an insignificant influence or a positive influence (34.6% and 25.7% respectively).

Most of the courses of actions of the gmina authorities mentioned in the questionnaire were thought to be the most important by the respondents, and the percentage of particular answers was as follows: health care and welfare – 57.9%, building the social consciousness and attitudes – 50.5%, developing the economic potential of the gmina – 56.6%, shaping and protection of environment – 50.5%, and safety of inhabitants – 52.8%.

As far as the cooperation with other gminas is concerned, the respondents think that actions connected with planning and carrying out investments (68.2%), building and exploitation of waste dumps (74.8%), building and exploitation of the water supply network (73.3%) should be undertaken.

The respondents believed the following courses of economic development to be of the highest importance for the gmina:

- agriculture – 86.9%,
- agricultural and food processing – 64.8%,
- tourism – 37.5%,
- environmental protection – 51.4%,
- services – 50.5%,
- handicraft – 29.9%,
- culture and folk art – 31.4%,
- industry and small-scale production – 48.6%.

Later on the respondents answered the questions concerning barriers and chances for the development in the above mentioned courses of development.

As the main barriers for the development of tourism in gmina the following ones were mentioned:

- lack of financial resources for such a development – 57.4%,
- lack of organised tourist network, e.g., track network – 43.5%,
- lack of tourist infrastructure – 42.1%.

They saw, however, a chance for development in free legal and economic consultancy services (30.5%) and property tax allowances and exemptions (36.8%).

In respondents' opinion the main obstacles for services development were:

- lack of economic instruments supporting such a development – 42.5%,

- unprofitability of the service – 43.5%,
- lack of financial resources for such a development – 50.0%.

While still, they saw a chance for the development in property tax allowances and exemptions (44.8%) and credit guarantees (34.0%).

In respondents' opinion the main obstacles for handicraft development in the gmina were:

- lack of economic instruments supporting handicraft – 41.5%,
- unprofitability of handicraft – 42.5%,
- lack of financial resources for such a development – 47.7%.

And as a chance for development in free legal and economic consultancy services (26.4%) and credit guarantees (28.7%).

In respondents' opinions the main obstacles for the development of industry and small-scale production were:

- lack of financial resources for such a development – 57.0%,
- lack of investors supporting the development of industry – 54.3%,
- lack of infrastructure enabling the development of industry – 48.6%.

Again, a chance for the development in property tax allowances and exemptions (33.3%) and credit guarantees (30.1%).

In respondents' opinions the main obstacles for the development of environmental protection were:

- lack of financial resources for such a development – 48.1%,
- lack of economic instruments supporting such a development – 53.7%,
- lack of interest of the gmina inhabitants – 47.7%.

Again, a chance for the development would be in free legal and economic consultancy services (24.8%), and property tax allowances and exemptions (24.5%).

In respondents' opinions the main obstacles for the development of agricultural and food processing were:

- lack of investors interested in the development of processing – 55.1%,
- lack of financial resources for such a development – 54.7%,
- lack of infrastructure for such a development – 49.1%.

And as a chance for the development they saw in transport tax allowances and exemptions (26.2%) and credit guarantees (28.7%).

The main obstacles for the development of agriculture in the gmina in respondents' opinions were the following:

- unprofitability of agriculture – 53.3%,
- lack of organised market for produce – 58.9%,
- lack of preferential credits for agriculture – 44.9%.

They saw, however, a chance for the development in property tax allowances and exemptions (28.7%) and credit guarantees (32.7%).

For the most important material and safety issues, possible to be carried out in the gmina in present conditions, the respondents named the following:

- increasing the number of work places – 65.1%,
- increasing profitability of agricultural production – 72.6%.

As the most important material and safety issues, possible to be carried out in the gmina at the lowest cost, the respondents named the following:

- ensuring better public safety – 52.9%,
- increasing profitability of agricultural production – 50.0%.

As the most important objectives concerning the gmina economic potential development, the respondents mentioned:

- organised market for agricultural produce – 82.2%,
- development of economic infrastructure – 67.3%,
- promotion of well organised and specialised farms – 67.3%.

The inhabitants of Opatowiec gmina believe the following elements of infrastructure to be underdeveloped, causing large difficulties and in urgent need of being improved:

- technical infrastructure – 51.9%,
- agricultural infrastructure – 59.0%.

As far as the elements of economic infrastructure are concerned, the opinion of inhabitants towards the underdeveloped and calling for urgent improvement concerned the following aspects:

- agricultural machines and equipment repair services – 42.9%,
- provisioning and purchase points – 53.8%.

As far as technical infrastructure is concerned, the following elements are believed to be underdeveloped:

- roads (building new ones and rebuilding the existing ones) – 66.4%,

- building of the sewerage system and sewage plants (building up) – 68.2%.

As far as the objectives concerning health and welfare are concerned, the following issues were mentioned to be the most important:

- widespread and easily available health care – 77.4%,
- a wide range of services connected with health care – 76.6%.

The most onerous social problems for the gmina's inhabitants were:

- unemployment among adults – 78.7%,
- unemployment among young people – 87.0%,
- lack of prospects for economic development – 78.7%.

As the least serious problems the inhabitants mentioned national and ethnic problems (73.6%).

According to the opinion of the local community the following objectives connected with shaping and protection of environment are the most important:

- sewage management – 81.1%,
- disposal of illegal waste dumps – 80.2%.

The respondents thought the influence of protected area on the gmina development to be: negative - industry (48.5%), and positive - tourism (45.5%), shaping and protection of environment (49.5%). Other factors are neutral.

The most important objectives connected with social consciousness and attitudes are:

- availability of diverse forms of development for young people – 76.0%,
- adjusting the system of education to labour market – 75.0%.

According to the respondents the problems listed below are the most urgent and should constitute the priority in the scope of gmina's activity:

- extending and repairing roads – 73.6%,
- creating new work places and curbing the unemployment – 78.7%.

Principally, the following types of households took part in the survey – in respect to the number of people within one household:

- three people (2 adults + 1 child) – 21.0%,
- four people (2 adults + 2 children) – 29.5%,
- five people (2 adults + 3 children) – 13.3%.

Households in respect to the number of professionally active people:

- one person – 18.0%,
- two people – 64.8%,

The majority of respondents considered their financial situation as sufficient (50.5%) or satisfactory (22.9%). 7.6 % considered it as bad.

The respondents opinion on the prospects for the development of their working place being the main source of earning a living were as follows:

- hard to tell – 35.2%,
- there are no chances for the development without exterior financial support – 27.6%.

For 42.9% of respondents working in the public sector is the main source of earning a living and working in their own farm is a source of earning a living for 44.8%.

## Conclusion

Despite many limitations resulting from nature preservation and infrastructure deficiencies the gminas situated in protected areas provide the inhabitants of rural areas the possibilities for development as they offer the prospects for multifunctional development, among others, through tourism or health foods production. This kind of actions require a special form of subsidising, i.e. first of all they should obtain financial resources for multifunctional development, especially for creating new non-agricultural work places and creating infrastructure for nature preservation and structural changes in agriculture. Moreover, business entities should have the chance to obtain subsidies in recognition of limiting their conventional production to the environment friendly one in protected areas in order to level their chances on the market, which would be favourable for active nature preservation. Such instruments would stimulate the multifunctional development based on ecological farming, tourism and services concerning leisure activities. These instruments already exist in Poland, for example agro-environment programme since September 2004. There exists the necessity to intensify such actions in order to obtain larger resources from other sources assigned for this goal. There exist, moreover, the need to introduce a programme promoting such actions for nature preservation so that inhabitants interested in it can obtain

information on where and how to apply for resources assigned for this goal, because there is a poor knowledge in this field and farmers ask about it.

The improvement of living standards, natural environment preservation and the growth of economic potential are the basic and strategic goals for the actions of local authorities and local community.

Due to its geographical situation in relation to industrial centres of the region, the gmina has limited employment prospects outside agriculture, which constitutes an adverse factor.

The results show that agriculture (87%), wildlife protection (51%), tourism (38%), services (51%), craft (30%), food processing (65%), and industry (49%) are the most preferred courses of development by the inhabitants in Opatowiec municipality.

The course and type of proposed agriculture in this gmina is explicitly pro-ecological, that is based on ecological farming. The role of ecological farming in durable and balanced development of protected areas is particularly important because of agriculture being the governing course of development in these areas.

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**Preferowane kierunki ekorozwoju przez  
mieszkańców gminy opatowiec w  
województwie świętokrzyskim (Polska)**

W Polsce obszary chronione obejmują 33,1 % powierzchni kraju, przy czym ich udział w poszczególnych regionach jest zróżnicowany. Największy ich udział odnotowuje się w województwie świętokrzyskim. Województwo to ma system obszarów chronionych. System ten obejmuje 62 % całkowitej powierzchni województwa. W tym województwie wśród 72-ch gmin wiejskich w 49-ciu jest przewaga obszarów chronionych w całości powierzchni. Są to najczęściej parki krajobrazowe i obszary chronionego krajobrazu. Jedną z takich gmin jest gmina Opatowiec, która w 96 % jest położona w obszarze chronionym (Nadnidziański Park Krajobrazowy i obszar chronionego krajobrazu). Gmina Opatowiec jest położona w województwie świętokrzyskim, która ma 68 km<sup>2</sup> i 3 691 mieszkańców.

Badania przeprowadzono wśród 108 mieszkańców, którzy wyrazili swoją opinię za pomocą kwestionariusza ankietowego. W pracy przedstawiono preferowane kierunki rozwoju

przez mieszkańców gminy Opatowiec w aspekcie ekorozwoju. Badania opierały się na wyrażeniu swojej opinii przez mieszkańców na temat poszczególnych kierunków, to jest: turystyki, usług, rzemiosła, przemysłu, rolnictwa, przetwórstwa rolno-spożywczego oraz w oparciu o ochronę przyrody. Ponadto mieszkańcy wskazali najpilniejsze kierunki działania władz w obecnej chwili, wśród poniższych: zabezpieczenie materialne, ochrona zdrowia i opieka społeczna, kształtowanie świadomości i postaw społecznych, rozbudowa potencjału gospodarczego gminy, kształtowanie i ochrona środowiska, kształtowanie struktury przestrzennej i bezpieczeństwo mieszkańców.

Wyniki wskazują, że rolnictwo (87 %), działania na rzecz ochrony przyrody (51 %), turystyka (38 %), usługi (51 %), rzemiosło (30 %), przetwórstwa spożywcze (65 %) i przemysł (49 %) są głównymi preferowanymi kierunkami rozwoju przez mieszkańców w gminie Opatowiec.

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## Regional aspects of rural areas development

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### **Abstract**

The paper discusses one of the key problems of transition economies it means rural areas development in the context of the regional policy. Author describes the details of the mezeoeconomic model of the regional development based on the demand theoretical background. He emphasises new attitude related to the ecological environment of social system. Then one can find description of individual and aggregated equilibrium of the subsystem. On the base of the model author derives interesting practical conclusions for the economic policy considering decentralisation of public decisions. Mixture of individual activities and rational policy measure is the condition of rural development.

**Key words:** rural development, regional policy, agribusiness, agriculture.

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### **Introduction**

Transformation economies of East and Middle Europe experience special social and economic process connected with the changes of foundations of system activity. First is political background reform with introduction of democratic solutions in the public choice and variety of political parties. Second is the privatisation of the economic units by transferring the private capital – home and foreign to the former state owned companies. Third is connected with the implementation of market-orientated regulations to the whole manufacturing and consumer decisions. Fourth refers to the macroeconomic policy related to the budget role, financial market influence and price importance. All these changes are observed in every single economy of post-socialist countries and influence all the sectors and individual enterprises.

Special position in these processes stand the agriculture and agribusiness sector where many of the resources should be modernised and lots of firms should change their structure.

In order to illustrate the main relations and the most important institutions the work will deliver concept of regional development of rural areas in the view of demand theory of economic growth coming from John Maynard Keynes deliberations (Keynes J.M. 1985).

This model can be applied because the rural areas economic resources are mainly used partly due to not-satisfied demand level. Typical surplus situation in the resources market is observed in

labour force balance while one can describe different types of unemployment including hidden number of potential employees.

### **Foundations of the model**

In the presented model we assume following introductory remarks (bases).

1. The rural areas are the socio-economic categories located out of urban regions and industrial zones.

2. Most of economic activities in the rural areas is strongly linked to the land and natural environment.

3. Capital and human resources in the farms or rural households are active simultaneously in the commercial and consume activities.

4. Lot of output manufacturing in rural areas do not occur in the market due to selfsupply of the farmers families.

5. Rural households constitute the main element of multifunction agribusiness.

As far as subject structure of the model is concerned we can assume that there are three groups of units acting in the process. The first are rural households usually with several people living together and running joint policy of incomes and expenditures. Most of them is able to dispose the land resources as well as other natural capital (woods, lakes). Apart from them we can describe agribusiness enterprises implemented in the household or existing independently. These units buy the resources from the households and use them

to manufacture market needed goods. Some of them deliver the services of production or commercial character. The third actor of this market is public institution representative it means local authorities, political ministries, financial and insurance units. This three-elements system is connected in the rural surroundings with the life-supporting environment. This is one of the key condition of sustainable development providing energy, natural resources, air, water and general environment services. Last but not least of the set is the social and cultural surroundings sometimes creating the social capital of the region like local ways of manufacturing, special individual entrepreneurship or difficult to evaluate heritage of local society (Fig. 1).

The figure expresses possible relations in the regional economic system while the market determines decisions among individual households and agribusiness companies. To complete the mode we should add that state is important player in that game by preparing economic policy measures and by collecting taxes from the incomes.

If we look at the whole model there are some deciding determinants of the development scenario deriving from the division of the system into material sphere and regulatory sphere. The determinants are separate for the real (material) zone and for regulatory one (Fig 2).

Some of the described determinants are obviously depended on free market microeconomic

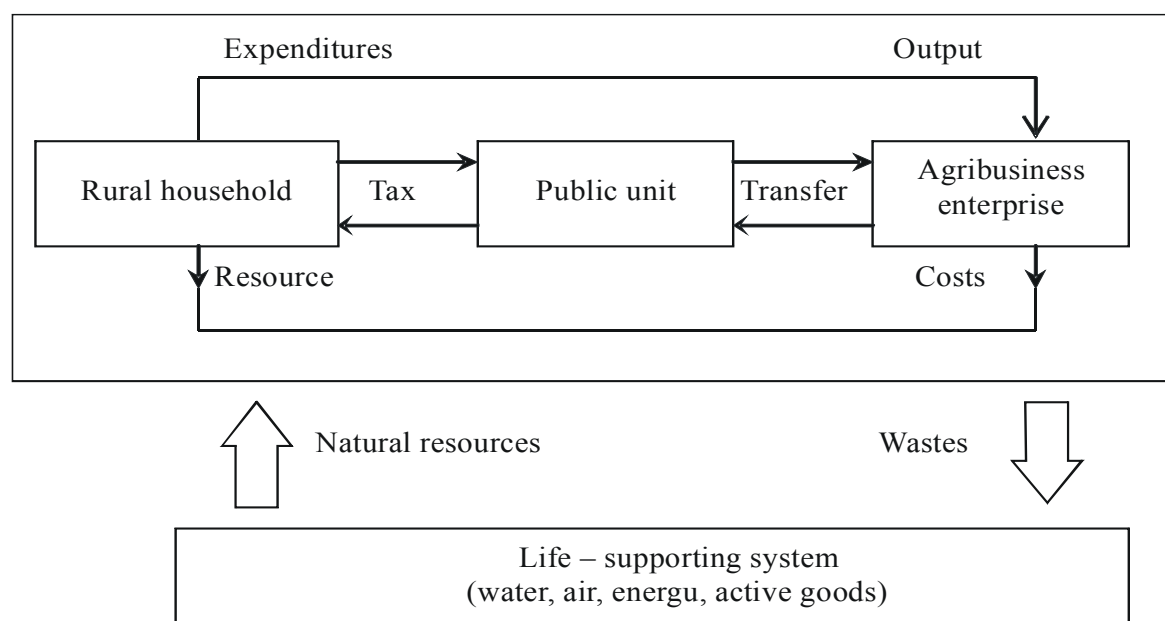
decisions but some are definitely created by state intervention or even globalisation processes.

Very important element of this model is market determining the prices of the goods and incomes of the resources' owners. In the regional context we emphasise the role of marketing as the activity of the entrepreneurs and the possible increase of consumers funds by the social or credit transfers (Fig. 3).

### Regional model equilibrium

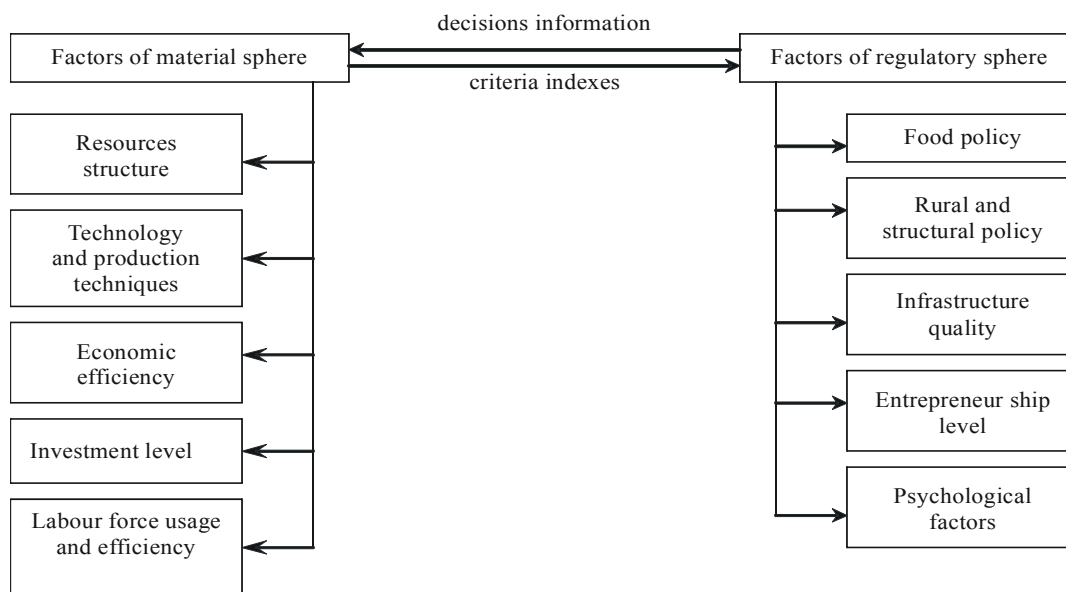
Because the regional development of the rural areas is only possible with the state of balance between main branch markets we should describe the theoretical framework of this situation. To start presentation we show individual and social company comparison in the sustainable development case. As figure 4 shows natural balance of the commercial unit depends on its marginal costs curve course and shape of demand curve (DD). But marginal costs can be treated as the private ones ( $MPC = S$ ) when we do not consider external ecological effects or as the social ones while the life-supporting system is concerned (Fig. 4).

With the private costs calculations company delivers  $Q_2$  quantity of output because marginal private costs curve is equal the supply level ( $S$ ). But when social costs are calculated production



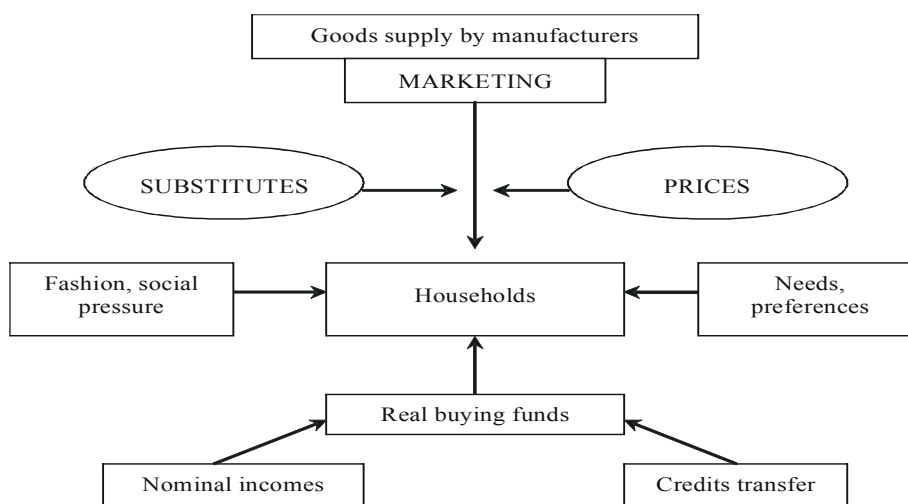
Source: C. Folke: *Socioeconomic dependence on the life-supporting Environment*. Kluwer Academy Publishers Stockholm 1991.

Fig. 1 Economic and ecological systems joined in rural areas activity



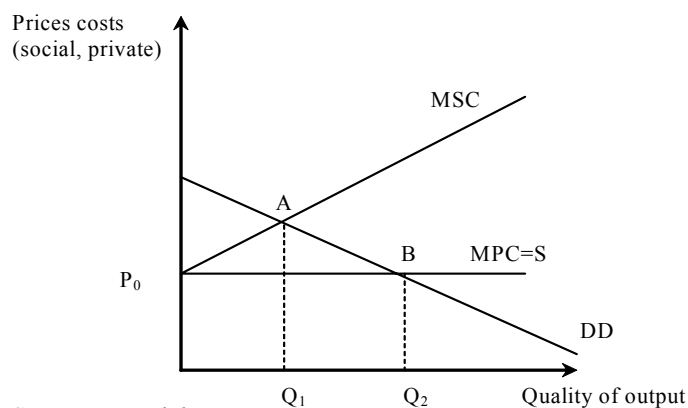
Source: own analysis.

Fig. 2 Determinants of the regional model development



Source: own elaboration.

Fig. 3 Demand role and marketing in the consumer market of region



Source: own elaboration.

Fig. 4 Company balance in the sustainable development case

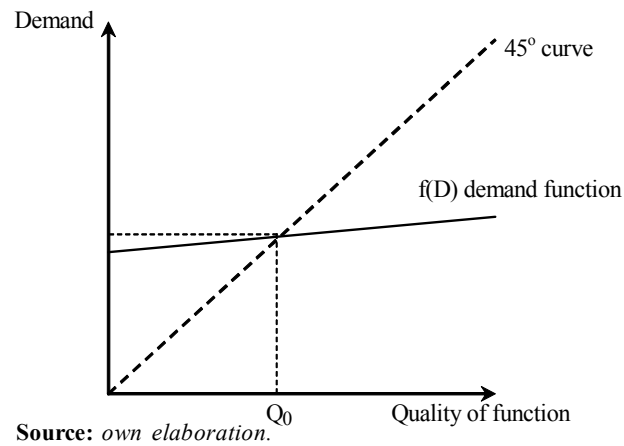


Fig. 5 Goods market equilibrium in mezeconomic model

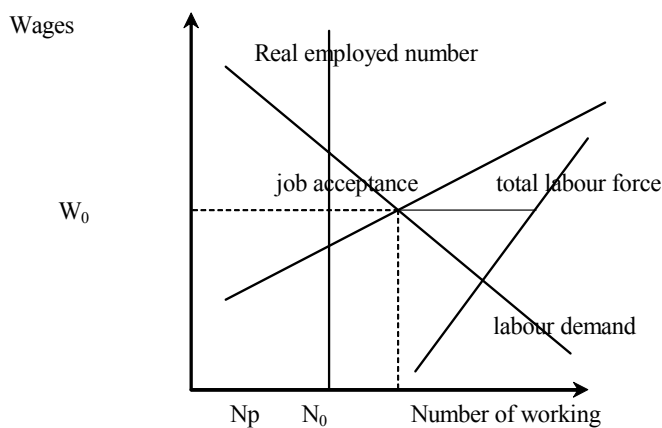


Fig. 6 Labour market equilibrium in regional model

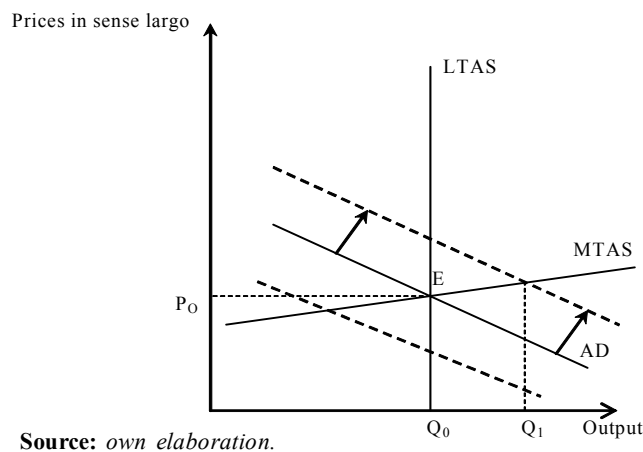


Fig. 7 Total stability of regional economy in the rural areas context

is less and equals  $Q_1$  because company should compensate natural environment usage.

According to the demand (Keynes) model of goods market aggregate data of the supply in the region depend on level of expenditures in

mezeconomic scale. It means that actual output of the companies is determined by the local households and marginal rate of savings (Fig. 5).

Equilibrium of the market is gained while the demand function crosses the 45° curve represent-

ing situation of all incomes of the household are spent for consumption purposes.

Second important market of the region is the labour force one where the price determination is not deciding about actual balance. We presume that number of available employees and unemployed is so high that real wages can be decreased for the many of participants of the market. Balance of the labour force supply and demand depends mainly on the current workplaces in the regional firms (Fig. 6).

As the figure 6 shows the rural areas is less that could be in natural market conditions because of smaller activity of the firms not only in agribusiness. When we summarise hitherto analysis it is possible to present general concept of regional equilibrium in regional aspects and this prepare some practical conclusions. We have to emphasise the differences between middle or short term perspective in the view and long term analysis of the equilibrium. The second part of the estimation is rather similar to the classic or neo-classic theoretical framework where the supply curve (LTAS) is vertically located. It means that flexibility of price and rates can easily adjust quantity of goods, labour market is a bit resistant because of trade unions activity or state social security increase (Fig. 7).

Middle-term aggregated supply curve expresses Keynes type behaviour of the producers while the demand increase results with fast adjustment of output increase. In that case Q1 level of supply means the adequate usage of more labour force and non-active capital resources. But in long-term perspective the potential production is stable and the amount of supply equals Q optimal when all the resources are used. Hopefully classical attitude accepts the productions increase in case of labour force increase or technological breakdown implementation or in the case of labour efficiency growth. Therefore systematic growth of regional output is possible and depends on the proper combination of entrepreneurship and state (public) intervention policy. (Winiarski B., 2002).

As far as the measures of economic policy are concerned in the field of rural development regional authorities and national government can use lots of incentives to encourage productivity. Apart from typical prosupply instruments like taxes de-

crease or active budget policy one can introduce following dedicated actions:

1. Technical and social infrastructure development or construction as the condition for further growth.

2. Soft programs facilitating human resources of the rural areas improvement like trainings, qualifications changes or adjustment to market reality.

3. Local institutional framework organisation for business activity support e.g. small scale enterprises consultancy units.

4. Financial assistance in preparing and conducting local investments creating new workplaces in the neighbourhood.

5. Changes in some regulations considering labour market in order to make it more flexible and encouraging the manufactures to employ more people.

All these important instruments can be introduced while the sort of decentralisation in economy management is observed. Then local authorities and local companies will be interested in the development of their organisations.

In the postsocialist countries we are able to use some structural funds of European Union dedicated for the rural development. First there are preaccession measures for agricultural restructuring and modernisation called SAPARD program. Moreover we can apply in two main sources of financial aid for the transition period 2004-2006. One of them is connected with similar instruments like SAPARD eg. investments in agricultural enterprises, modernisation of food processing companies, infrastructure development program and multifunctional activating encouragement. The second one is included into second pillar of Common Agricultural Policy and comprises natural environment protection and rural society activity instruments.

## Conclusions

According to presented model of the regional development of rural areas in the transformation countries we could derive following scientific conclusions:

1. Real economic growth of the rural areas is strongly depended on the actual level and structure of demand. The demand is represented by the rural household.

2. To increase production competitiveness of the regions one should change technological bases of the traditional agriculture and decrease the employed in the farming.

3. Lots of financial assistance should be transferred into small regional communities in order to develop technical and social infrastructure facilitating further economic growth.

4. Key element of the development in the rural society is the quality of human resources not only in the professional abilities but as the individual entrepreneurship.

5. Post-socialist countries with the use of European Union Rural Development Policy have the opportunity of rather fast increase of the headway in the socioeconomic system of the rural areas.

Nowadays many of local communities are prepared to the economic development but many others still need to introduce specific development strategy including all the local advantages and external changes.

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## Действия направленные на развитие сельских регионов

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### **Abstract**

Вступление Польши в Евросоюз обозначало объятие нашего сельского хозяйства и сельских регионов Совместной Аграрной Политикой (САП), а также финансовой помощью в рамках Структуральных Фондов ЕС. В настоящий момент можно определить два столпа САП. Первый из них содержит инструменты связанные с защитой цен и стабилизацией рынка, ограничением продукции, удерживанием уровня доходов. Второй - это средства САП, поддерживающие реструктуризацию сельского хозяйства и сельских регионов.

Существенную роль в преобразовании сельских регионов в Польше играет План Гарантий Европейского Фонда Ориентации и Аграрной Гарантии (ПГЕФОиАГ). Его целью является поддержка равномерного развития сельских регионов и улучшение состояния сельских хозяйств. Кроме того, осуществляет он также общественные, экономические и экологические аспекты этого развития.

План Развития сельских регионов охватывает м.пр. структуральные ренты, поддержку малотоварных хозяйств, приспособление сельских хозяйств к стандартам ЕС, поддержку групп аграрных производителей.

В этой статье поднята проблема места и роли аграрного сектора в польской экономике, условий и приоритетов Плана Развития сельских регионов а также оценки экономических, общественных и экологических последствий его внедрения.

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### **Значение и роль аграрного сектора в Польской экономике**

В Польше сельское хозяйство имеет большее значение, чем в странах Западной Европы, существуют регионы, где играет оно роль одной из ведущих отраслей экономики, влияя тем самым на уровень развития и стандарт жизни жителей. польские сельские хозяйства ведутся в своём большинстве многосекторным образом при помощи экстенсивных методов.

сельское хозяйство имеет небольшое влияние на преобразование окружающей среды. Поводом такого положения дел является низкая интенсивность продукции. Природные условия, а также огромные ресурсы рабочей силы повалют на развитие трудоёмких направлений в аграрной продукции. Кроме того, являются они прекрасными условиями для развития экологического сельского хозяйства.

### **Характеристика общества в Польских сельских регионах**

Домашние хозяйства, которые состоят из 5 или более человек, составляют 24,5% всех домашних хозяйств на селе, тогда как в городе только 9,0%. кроме того, по отношению к городской местности, сельские регионы характеризуются большим процентом детей и молодёжи. В данной ситуации, обеспечение сельских регионов соответственной системой образования, а также новыми рабочими местами является делом очень трудным. Тем более что как минимум 40% жителей села - это люди в возрасте более 40 лет.

Образование людей, работающих в сельском хозяйстве, далее остаётся на очень низком уровне. Однако в последнее время удалось заметить рост числа людей, имеющих среднее образование ( 58%). Низкий уровень образования в конечном итоге ограничивает возможности развития иных (чем аграрная) действий.

## Сфера действия и условия плана развития сельских регионов

План Развития сельских регионов (ПРСР) является операционным документом, который обозначает цели, приоритеты и условия поддержания равномерного развития сельских регионов. Кроме того, указывает он на экономические, природно-экологические и общественные аспекты этого развития совместно с иными структуральными программами (прежде всего с Секторной операционной программой: “Реструктуризация и модернизация сектора пищевой промышленности и развитие сельских регионов”).

ПРСР создало Министерство Сельского Хозяйства и Развития села. На территории Республики Польши за реализацией плана следит Агенство реструктуризации и модернизации сельского Хозяйства, аккредитированное в качестве агентства-платёжника. Отвечает оно за оказание финансовой помощи, идущей на поддержку действий обозначенных в ПРСР: авторизацию, реализацию платежей и их учёта.

Реализация ПРСР содержит на 2004-2006 года следующие действия:

- структуральные ренты;
- поддержку малотоварных хозяйств;
- поддержку сельскохозяйственной деятельности в регионах с неблагоприятными условиями для хозяйственной деятельности;
- поддержку аграрных инициатив и улучшение бытовых условий для животных;
- посадку леса на аграрных территориях;
- приспособление сельских хозяйств к стандартам ЕС;
- поддержку групп сельских производителей;
- техническую помощь;
- доплаты к непосредственным платежам;<sup>1</sup>

Действия эти будут финансироваться как при помощи бюджетных средств (предназначенных на эту цель в бюджетном законе каждой страны члена ЕС), так и

средствами Гарантийной Секции ЕАГГФ.

В трактате со дня 16.04.2003 года о вступлении новых членов в ЕС предвидено возможность расширения инструментов (в периоде внедрения Плана 2004-2006). Новые действия содержат:

- поддержку малотоварных хозяйств (ускорение процесса реструктуризации хозяйств, создание новых рабочих мест),
- приспособление сельских хозяйств к стандартам ЕС;
- поддержку групп аграрных производителей;
- техническую помощь для организаций и органов, реализующих задания, связанных с развитием сельских регионов.

## Стратегические цели и выборочные приоритеты развития сельских регионов

Польские сельские хозяйства и перерабатывающие производства встречают очень сильную конкуренцию со стороны производителей стран ЕС. В связи с этим нуждаются они в финансовой поддержке, чтобы возможным стало приспособить свой производственный процесс к уровню стран ЕС, что в свою очередь несёт за собой высокие инвестиционные издержки. К сожалению, экономическая ситуация в Польше, как и структура польского хозяйства делает почти невозможным получение доходов с внеаграрной деятельности.

Неудовлетворительная финансовая поддержка крестьян может в итоге быть причиной роста общественных издержек вступления Польши в ЕС, а также значительным барьером в процессе модернизации сельских хозяйств. Является это поводом к охватыванию Планом не только малотоварных хозяйств, но и всех остальных, чья продукция попадает на рынок. Такое положение вещей оправдывает принятие действий, которые облегчают изменения в аграрной структуре, ускоряют процесс смены поколений, а также наклоняют крестьян к самостоятельной стабилизации своих доходов.<sup>2</sup>

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<sup>1</sup> План Развития Сельских Регионов на 2004-2006 года; Министерство Сельского Хозяйства и Развития Села; Варшава 2004

<sup>2</sup> План Развития Сельских Регионов на 2004-2006 года; Министерство Сельского Хозяйства и Развития Села; Варшава 2004

## Структуральные ренты

Структурные ренты созданы для жителей в до пенсионном возрасте (после 55 лет), которые обхвачены системой пенсионного страхования для крестьян. Целью данного инструмента является обеспечение дохода личностям, которые отрекутся от ведения аграрной деятельности в пользу иного крестьянина или своего наследника. Само хозяйство может быть отдано государству (Агенству Аграрной Недвижимости) для охраны окружающей среды или под посадку леса. Рента выплачивается каждый месяц в течение 10 лет.

## Поддержка малотоварных хозяйств и групп аграрных производителей

Приоритетом в поддержке малотоварных хозяйств является предъявление им необходимой финансовой помощи. Обеспечивает она финансовую ликвидность в хозяйствах с малым масштабом производства. Бенефициарами таких действий будут владельцы малотоварных хозяйств,

которые в данный момент не выполняют всех условий для существования такого хозяйства, но могут их выполнить в недалеком будущем.

Поддержка таких хозяйств, имеющих низкий производственный потенциал, может привести к росту уровня доходов их владельцев, а также сделать возможным инвестирование в производственный процесс с высоким уровнем рентабельности.

Данным инструментом должны быть обхвачены все активные хозяйства, которые будут использовать финансовые средства из структуральных фондов ЕС при ограниченной величине собственных средств. Рассчитывается, что в этой программе примет участие около 126 тыс. малотоварных хозяйств.

Кроме того, рассчитывается, что поддержкой в процессе объединений разных групп аграрных производителей, будут обхвачены около 170 таких групп. Позволит это на улучшение качества производимых продуктов, на приспособление количества товара к потребностям рынка, а также на увеличение ответственности производителей за свои действия.

Таблица 1

## Индикативная таблица финансирования (млн. ЕВР), финансовый год ЕФОиАГ

| приоритет А,<br>Рост конкурентальности хозяйств                              | 2004          |            | 2005          |              | 2006         |              | Период 2004-2006 |               |
|------------------------------------------------------------------------------|---------------|------------|---------------|--------------|--------------|--------------|------------------|---------------|
| Структуральные ренты                                                         | 148,5         | 119        | 213,5         | 170,8        | 278,5        | 222,8        | 640,5            | 512,4         |
| Поддержка малотоварных хозяйств                                              | 91,3          | 73         | 127,5         | 102          | 157,5        | 126          | 366,3            | 310           |
| Группы аграрных производителей                                               | 6,3           | 5          | 8,8           | 7            | 10,3         | 8,2          | 25,4             | 20,2          |
| <b>вместе приоритет А</b>                                                    | <b>246,1</b>  | <b>197</b> | <b>349,8</b>  | <b>279,8</b> | <b>446,3</b> | <b>357</b>   | <b>1032,2</b>    | <b>833,6</b>  |
| приоритет Б,<br>Равномерное развитие сельских регионов                       | 2004          |            | 2005          |              | 2006         |              | период 2004-2006 |               |
| Поддержка хозяйственной деятельности в регионах с неблагоприятными условиями | 244,8         | 196        | 366           | 292,8        | 366          | 292,8        | 976,8            | 781,4         |
| Поддержка аграрных инициатив и улучшение бытовых условий для животных        | 75            | 60         | 116,2         | 92,2         | 157,7        | 126,1        | 348,9            | 279           |
| Посадка леса на аграрных территориях                                         | 26,5          | 21,2       | 34            | 27,2         | 41,3         | 33           | 101,8            | 81,4          |
| Приспособление сельских хозяйств к стандартам ЕС                             | 72            | 57,6       | 83,9          | 67,1         | 87,5         | 70           | 243,4            | 194,7         |
| <b>вместе приоритет Б</b>                                                    | <b>418,3</b>  | <b>335</b> | <b>600,1</b>  | <b>480</b>   | <b>652,5</b> | <b>521,9</b> | <b>1670,9</b>    | <b>1336,5</b> |
| другие действия                                                              |               |            |               |              |              |              |                  |               |
| Техническая помощь                                                           | 13            | 10,4       | 11,3          | 9            | 9,7          | 7,7          | 34               | 27,1          |
| Доплаты к непосредственным платежам                                          | 269,5         | 216        | 240,3         | 192,2        | 195,5        | 156,4        | 705,3            | 564,2         |
| Проекты утвержденные в декрете Европейской Комиссии № 1268/1999              | 140           | 105        |               |              |              |              | 140              | 105           |
| <b>вместе другие действия</b>                                                | <b>422,5</b>  | <b>331</b> | <b>251,6</b>  | <b>201,2</b> | <b>205,2</b> | <b>164,1</b> | <b>879,3</b>     | <b>696,3</b>  |
| <b>План Развития сельских регионов</b>                                       | <b>1086,9</b> | <b>862</b> | <b>1201,5</b> | <b>961</b>   | <b>1304</b>  | <b>1043</b>  | <b>3582,4</b>    | <b>2866,4</b> |

Источник: План Развития сельских регионов на 2004-2006 года.

Равномерный рост сельских регионов осуществляется как через План, так и при помощи операционных программ, к которым можно отнести реструктуризацию и модернизацию сектора пищевой промышленности, а также рост конкурентоспособности экономики. Однако наиболее главной задачей является введение благоприятных для окружающей среды технологий.

### **Попытка оценки последствий внедрения плана развития сельских регионов в Польше**

Во время оценивания Плана мы стремились дать ответ на вопрос, какое влияние будут иметь действия, предпринятые в рамках Плана, на жизнь крестьян, на общественные связи, на установление стабильности в хозяйствах, на улучшение интеграции Плана с иными документами, касающихся сельских регионов.

Кроме этого исследовано, как запланированы в рамках Плана действия решают проблемы села, и как финансовые средства позволяют достичь поставленных целей.

На основании сделанной оценки можно прийти к выводу, что рассматриваемый проект соответствует нормативным рамкам ЕС, касающихся поддержки политики развития сельских регионов. Описанные инструменты приспособливают проектные решения к условиям польского сельского хозяйства и его финансовым возможностям. К важной части Плана относятся положения, которые непосредственно касаются ситуации сельского хозяйства в настоящий момент. Именно они определяют способ и масштаб реализации выборочных действий. Сделано вывод, что, План показывает огромное количество проблем. Замечена необходимость дополнений и изменений, таких как: введение или улучшение мясного производства, учтение регионального разнообразия аграрной среды и структуры сельских хозяйств. Подчёркнуто необходимость развития экологических сельских хозяйств.

Со слов экспертов, некоторые пункты Плана дополняются или даже повторяются. В краткосрочной перспективе проводятся действия, которые несколько смягчают

проблему доходной недостаточности наиболее слабых хозяйств, однако в длительном времени они не в состоянии решить проблем структурального характера. План, через свою поддержку малотоварных хозяйств, имеет за цель помочь молодым сельчанам, которые пытаются проявить свою активность в управлении сельским хозяйством методами управления малым предприятием.

При оценке влияния Плана на окружающую среду сделано вывод, что реализация его элементов не должна вести за собой каких-либо негативных последствий, а даже наоборот, должны появиться положительные эффекты. Величина таких эффектов зависит, прежде всего, от способа выдачи средств на разные приоритеты Плана, а также от методов его реализации. Внедрение Плана будет бесспорно влиять на рынок труда, прежде всего посредством путём - через обслуживание процесса его внедрения. Кроме того, План является шансом для развития малого и среднего бизнеса.

### **Заключение**

В настоящий момент времени как сельское хозяйство, так и сельские регионы должны развиваться согласно критериям равномерного развития. Хозяйственная деятельность должна защищать окружающую среду. В тоже время, аграрная деятельность должна гарантировать соответственный уровень дохода, который позволял бы сельчанам на нормальную жизнь. Всё это может обеспечить Совместная Аграрная Политика ЕС. Поэтому польские фермеры обязаны использовать все возможные финансовые средства из уже существующих фондов, применяя свою смекалку и инициативу.

### **Литература**

1. План Развития сельских регионов на 2004-2006 года; Министерство сельского Хозяйства и Развития села; Варшава 2004

### ***Działania na rzecz rozwoju obszarów wiejskich***

*Przystąpienie Polski do Unii Europejskiej oznacza objęcie naszego rolnictwa i obszarów wiejskich Wspólną Polityką Rolną (WPR) oraz*

*pomocą w ramach Funduszy Strukturalnych UE.*

*Obecnie wyróżnia się dwa filary WPR. Pierwszy, obejmuje instrumenty związane z ochroną cen i stabilizacją rynku, ograniczeniem produkcji, utrzymaniem poziomu dochodu. Drugi filar to środki towarzyszące WPR, wspierające restrukturyzację rolnictwa i rozwojowi obszarów wiejskich.*

*Znacząca rolę w przeobrażaniu obszarów wiejskich w Polsce odgrywa Plan Gwarancji Europejskiego Funduszu Orientacji i Gwarancji*

*Rolnej (EFOiGR). Jego celem jest wspieranie zrównoważonego rozwoju obszarów wiejskich i polepszenie kondycji gospodarstw rolnych. Realizuje społeczne, ekonomiczne i ekologiczne aspekty tego rozwoju.*

*Plan Rozwoju Obszarów Wiejskich obejmuje m.in. renty strukturalne, wspieranie gospodarstw niskotowarowych oraz na obszarach o niekorzystnych warunkach, dostosowanie gospodarstw rolnych do standardów UE., wspieranie grup producentów rolnych.*