ECONOMIC SCIENCE FOR RURAL DEVELOPMENT

Integrated and Sustainable Regional Development

№ 36
Jelgava
2014

TIME SCHEDULE OF THE CONFERENCE

Preparation: October 2013 – 20 April 2014
Process: 24-25 April 2014

University of Economics, Prague	Czech Republic
Estonian University of Life Sciences	Estonia
BA School of Business	Latvia
Baltic International Academy	Latvia
Latvian State Institute of Agrarian Economics	Latvia
University of Latvia	Latvia
Latvia University of Agriculture	Latvia
Riga International School of Economics and Business Administration	Latvia
Latvian State Forest Research Institute "Silava"	Latvia
Institute for National Economy Research	Latvia
Riga Technical University	Latvia
Rezekne Higher Education Institution	Latvia
State Priekuli Plant Breeding Institute	Latvia
Ventspils University College	Latvia
Aleksandras Stulginskis University	Lithuania
Kaunas University of Technology	Lithuania
Vilnius University	Lithuania
Mykolas Romeris University	Lithuania
Lithuanian University of Health Sciences	Lithuania
Vilnius Gediminas Technical University	Lithuania
Szczecin University	Poland
University of Warmia and Mazury in Olsztyn	Poland
Warsaw University of Life Sciences	Poland
Poznan University of Economics	Poland
West Pomeranian University of Technology in Szczecin	Poland
University of Agriculture in Krakow	Poland
Institute of Agricultural and Food Economics - National Research Institute, Warsaw	Poland
Welfare Projects Academy of Sciences in Lodz	Poland
South Dakota State University	USA
Pennsylvania State University, State College	USA
Russian Academy of Sciences	Russia
Saratov State Socio-Economic University	Russia
Kazakh Economic University	Kazakhstan

ISSN 1691-3078
ISSN 2255-9930 on line

ISBN 978-9934-8466-3-2

Abstracted / Indexed: AGRIS, EBSCO

http://www.esaf.llu.lv/journals-and-proceedings
www.fao.org/agris/
http://search.ebscohost.com/login.aspx?authtype=ip,uid&profile=ehost&defaultdb=lbh
http://search.ebscohost.com/login.aspx?direct=true&db=a9h&jid=25AP&site=ehost-live

The Conference Committee

Professor **Baiba Rivza**	Latvia University of Agriculture **/Latvia/**
Professor **Irina Pilvere**	Latvia University of Agriculture **/Latvia/**
Professor **Barbara Freytag - Leyer**	Fulda University of Applied Sciences **/Germany/**
Professor **Bo Öhlmer**	Swedish University of Agricultural Sciences **/Sweden/**
Professor **Wim J.M. Heijman**	Wageningen University /the **Netherlands**/
Professor **Bartosz Mickiewicz**	West Pomeranian University of Technology **/Poland/**
Professor **Maria Parlinska**	Warsaw University of Life Sciences **/Poland/**
Professor **Alina Danilowska**	Warsaw University of Life Sciences **/Poland/**
Professor **Jacques Viaene**	University of Gent /**Belgium**/
Professor **Arild Sæther**	University of Agder **/Norway/**
Professor **Vilija Alekneviciene**	Aleksandras Stulginskis University **/Lithuania/**
Associate professor **Bruna Maria Zolin**	University of Venice **/Italy/**
Professor **Ingrida Jakusonoka**	Latvia University of Agriculture /**Latvia/**
Professor **Andra Zvirbule-Berzina**	Latvia University of Agriculture /**Latvia/**
Professor **Aina Dobele**	Latvia University of Agriculture /**Latvia/**
Professor **Modrite Pelse**	Latvia University of Agriculture /**Latvia**/
Associate professor **Gunita Mazure**	Latvia University of Agriculture /**Latvia**/
Associate professor **Inguna Leibus**	Latvia University of Agriculture /**Latvia**/
Associate professor **Aija Eglite**	Latvia University of Agriculture /**Latvia**/
Associate professor **Gunars Brazma**	Latvia University of Agriculture /**Latvia**/

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Editorial Board

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Reviewers

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

All reviewers were anonymous for the authors of the articles.

The following 76 reviewers from scientific and academic institutions of 7 countries (the Czech Republic, Estonia, Latvia, Lithuania, Russia, Poland, and the United States of America) have written 196 reviews.

Vilija Alekneviciene	Dr.oec., prof. (Aleksandras Stulginskis University, Lithuania)
Audrius Aleknavicius	Dr.,prof. (Aleksandras Stulginskis University, Lithuania)
Valentina Andrejeva	Dr.oec. (A/S Olainfarm, Latvia)
S.A.Andryuschenko	Dr.oec., prof. (IAgP RAS, Russia)
Anita Auzina	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
James G. Beierlein	PhD, prof. (Pennsylvania State University, United States of America)
Dina Bite	Dr.sc.soc., assist. prof (Latvia University of Agriculture, Latvia)
Ligita Bite	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Agnieszka Brelik	PhD. (West Pomeranian University of Life Sciences, Poland)
Akvile Cibinskiene	PhD , assoc. prof. (Kaunas University of Technology, Lithuania)
Cheslav Christauskas	Dr., assoc. prof. (Kaunas University of Technology, Lithuania)
Alina Danilowska	Dr.hab., assoc. prof. (Warsaw University of Life Sciences, Poland)
Ramunas Darulis	Dr.oec. (Mykolas Riomeris University, Lithuania)
Konstantins Didenko	Dr.oec., prof. (Riga Technical University, Latvia)
Aina Dobele	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Lasma Dobele	Dr.oec. (Latvia University of Agriculture, Latvia)
Aija Eglite	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Zbigniew Florianczyk	PhD , assist. prof. (Institute of Agricultural and Food Economics, Poland)
Gunta Grinberga-Zalite	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Aleksander Grzelak	PhD , assoc. prof. (Poznan University of Economics, Poland)
Jan Gorecki,	Dr., prof. (Polish Academy of Sciences, Poland)
Wojciech Gotkiewicz	PhD, prof. (University of Warmia and Mazury in Olsztyn, Poland)
Sandra Gusta	Dr.oec. assist. prof. (University of Latvia, Latvia)
Joanna Henrik	PhD (West Pomeranian University of Life Science, Poland)
Ingrida Jakusonoka	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Inara Jurgena	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Stanislavs Keiss	Dr.oec., assoc. prof. (University College of Economics and Culture, Latvia)
Joanna Kisielinska	Dr. hab. (Warsaw University of Life Sciences, Poland)
Gediminas Kuliesis	Dr. (Lithuanian Institute of Agrarian Economic, Lithuania)
Vulfs Kozlinskis	Dr.hab.oec., prof. (Latvia University of Agriculture, Latvia)
Jakub Kraciuk	Dr. hab., assoc. prof. (WULS-SGGW, Poland)
Karlis Kreslins	PhD (Ventspils University College, Latvia)
Bogdan Klepacki	Dr hab., prof. (Warsaw University of Life Sciences, Poland)
Jakub Kraciuk	Dr.hab., assoc. prof. (WULS-SGGW, Poland)
Krystyna Kryzanowska	Dr., professor (Warsaw University of Life Sciences, Poland)
Jüri Krusealle	PhD, assoc. prof. (Estonian University of Life Sciences, Estonia)
Piotr Kulyk	PhD, assit. prof. (University of Zielona Gora, Poland)
Janis Kusis	Dr.hist., assoc. prof. (Latvia University of Agriculture, Latvia)
Inguna Leibus	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Sviesa Leitoniene	Dr., assoc. prof. (Kaunas University of Technology, Lithuania)
Gunita Mazure	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Joseph Mezera	Senior researcher, Csc, (Institute of Agricultural Economics and Information, Czech Republic)
Bartosz Mickiewicz	Dr hab., prof. (West Pomeranian University of Technology in Szsecin, Poland)
Tatjana Muravska	Dr.oec., prof. (University of Latvia, Latvia)
Aina Muska	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Publication Ethics and Malpractice Statement for the International Scientific Conference "Economic Science for Rural Development"

The conference and its proceedings are dedicated to topical themes of rural development, such as primary and secondary agricultural production and cooperation; integrated and sustainable development; finance and taxes; resources and sustainable consumption; home economics and other.

The Editorial Board is responsible for, among other, preventing publication malpractice. Unethical behaviour is unacceptable and the authors who submit articles to the Conference Proceedings affirm that the content of a manuscript is original. Furthermore, the authors' submission also implies that the material of the article was not published in any other publication; it is not and will not be presented for publication to any other publication; it does not contain statements which do not correspond to reality, or material which may infringe upon the intellectual property rights of another person or legal entity, and upon the conditions and requirements of sponsors or providers of financial support; all references used in the article are indicated and, to the extent the article incorporates text passages, figures, data or other material from the works of others, the undersigned has obtained any necessary permits as well as the authors undertake to indemnify and hold harmless the publisher of the proceedings and third parties from any damage or expense that may arise in the event of a breach of any of the guarantees.

Editors, authors, and reviewers, within the International Scientific Conference **"Economic Science for Rural Development"** are to be fully committed to good publication practice and accept the responsibility for fulfilling the following duties and responsibilities, as set by the *COPE Code of Conduct and Best Practice Guidelines for Journal Editors of the Committee on Publication Ethics* (COPE).

It is necessary to agree upon standards of expected ethical behaviour for all parties involved in the act of publishing: the author, the editor, the peer reviewer, and the publisher.

DUTIES OF EDITORS

Publication decisions

The Editorial Board is responsible for deciding which of the articles submitted to the Conference Proceedings should be published. The Editorial Board may be guided by the policies of ethics and constrained by such legal requirements as shall then be in force regarding libel, copyright infringement and plagiarism. The editor may confer with other editors or reviewers in making this decision.

Fair play

An editor at any time evaluate manuscripts for their intellectual content without regard to the nature of the authors or the host institution including race, gender, sexual orientation, religious belief, ethnic origin, citizenship, or political philosophy of the authors.

Confidentiality

The editor and any editorial staff must not disclose any information about a submitted manuscript to anyone other than the corresponding author, reviewers, potential reviewers, other editorial advisers, and the publisher, as appropriate.

Disclosure and conflicts of interest

Unpublished materials disclosed in a submitted manuscript must not be used in an editor's own research without the express written consent of the author.

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

DUTIES OF REVIEWERS

Contribution to editorial decisions

Peer review assists the editor in making editorial decisions and through the editorial communications with the author may also assist the author in improving the paper.

Promptness

Any selected referee who feels unqualified to review the research reported in a manuscript or knows that its prompt review will be impossible should notify the editor and excuse himself from the review process.

Confidentiality

Any manuscripts received for review must be treated as confidential documents. They must not be shown to or discussed with others except as authorised by the editor.

Standards of objectivity

Reviews should be conducted objectively. Personal criticism of the author is inappropriate. Referees should express their views clearly with supporting arguments.

Acknowledgement of sources

Reviewers should identify relevant published work that has not been cited by the authors. Any statement that an observation, derivation, or argument had been previously reported should be accompanied by the relevant citation. A reviewer should also call to the editor's attention any substantial similarity or overlap between the manuscript under consideration and any other published paper of which they have personal knowledge.

Disclosure and conflict of interest

Privileged information or ideas obtained through peer review must be kept confidential and not used for personal advantage. Reviewers should not consider manuscripts in which they have conflicts of interest resulting from competitive, collaborative, or other relationships or connections with any of the authors, companies, or institutions connected to the papers.

DUTIES OF AUTHORS

Reporting standards

The authors of reports of original research should present an accurate account of the work performed as well as an objective discussion of its significance. Underlying data should be represented accurately in the paper. A paper should contain sufficient detail and references to permit others to replicate the work. Fraudulent or knowingly inaccurate statements constitute unethical behaviour and are unacceptable.

Data access and retention

The authors are asked to provide the raw data in connection with a paper for editorial review, and should be prepared to provide public access to such data (consistent with the ALPSP-STM Statement on Data and Databases), if practicable, and should in any event be prepared to retain such data for a reasonable time after publication.

Originality and plagiarism

The authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others that this has been appropriately cited or quoted.

Multiple, redundant or concurrent publication

An author should not in general publish manuscripts describing essentially the same research in more than one journal or primary publication. Submitting the same manuscript to more than one journal concurrently constitutes unethical publishing behaviour and is unacceptable.

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Acknowledgement of sources

Proper acknowledgment of the work of others must always be given. The authors should cite publications that have been influential in determining the nature of the reported work.

Authorship of the paper

Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the reported study. All those who have made significant contributions should be listed as co-authors. Where there are others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included on the paper, and that all co-authors have seen and approved the final version of the paper and have agreed to its submission for publication.

Hazards and human or animal subjects

If the work involves chemicals, procedures or equipment that have any unusual hazards inherent in their use, the author must clearly identify these in the manuscript.

Disclosure and conflicts of interest

All authors should disclose in their manuscript any financial or other substantive conflict of interest that might be construed to influence the results or interpretation of their manuscript. All sources of financial support for the project should be disclosed.

Fundamental errors in published works

When an author discovers a significant error or inaccuracy in his/her own published work, it is the author's obligation to promptly notify the editor or publisher and cooperate with the editor to retract or correct the paper.

Editorial Board

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Foreword

Every year the Faculty of Economics and Social Development, Latvia University of Agriculture holds the international scientific conference "Economic Science for Rural Development" and publishes internationally reviewed papers of scientific researches, which are presented at the conference. **This year** researchers from various European countries representing not only the science of economics in the diversity of its sub-branches have contributed to the conference; they have expanded their studies engaging colleagues from social and other sciences, thus, confirming inter-disciplinary and multi-dimensional development of the contemporary science. The conference is dedicated to topical themes of rural development; hence, the research results are published in 4 successive volumes (No 33, No 34, No 35, and No 36). The first volume of scientific conference proceedings was published in 2000.

The following topical themes have been chosen for the conference:

- Production and Co-operation in Agriculture
- Integrated and Sustainable Regional Development
- Finance and Taxes
- Marketing and Sustainable Consumption
- Rural Development and Entrepreneurship
- Home Economics
- New Dimensions in the Development of Society

Professors, doctors of science, associate professors, assistant professors, PhD students, and other researchers from the following higher education, research institutions, and professional organisations participate at the International Scientific Conference held on 24-25 April 2014 and present their results of scientific research:

University of Economics, Prague	Czech Republic
Estonian University of Life Sciences	Estonia
BA School of Business	Latvia
Baltic International Academy	Latvia
Latvian State Institute of Agrarian Economics	Latvia
University of Latvia	Latvia
Latvia University of Agriculture	Latvia
Riga International School of Economics and Business Administration	Latvia
Latvian State Forest Research Institute "Silava"	Latvia
Institute for National Economy Research	Latvia
Riga Technical University	Latvia
Rezekne Higher Education Institution	Latvia
State Priekuli Plant Breeding Institute	Latvia
Ventspils University College	Latvia
Aleksandras Stulginskis University	Lithuania
Kaunas University of Technology	Lithuania
Vilnius University	Lithuania
Mykolas Romeris University	Lithuania
Lithuanian University of Health Sciences	Lithuania
Vilnius Gediminas Technical University	Lithuania
Szczecin University	Poland
University of Warmia and Mazury in Olsztyn	Poland
Warsaw University of Life Sciences	Poland
Poznan University of Economics	Poland
West Pomeranian University of Technology in Szczecin	Poland
University of Agriculture in Krakow	Poland
Institute of Agricultural and Food Economics - National Research Institute, Warsaw	Poland
Welfare Projects Academy of Sciences in Lodz	Poland

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

South Dakota State University	USA
Pennsylvania State University, State College	USA
Russian Academy of Sciences	Russia
Saratov State Socio-Economic University	Russia
Kazakh Economic University	Kazakhstan

The comprehensive reviewing of submitted scientific articles has been performed on international and inter-university level to ensure that only high-level scientific and methodological research results, meeting the requirements of international standards, are presented at the conference.
Every submitted manuscript has been reviewed by one reviewer from the author's native country or university, while the other reviewer came from another country or university. The third reviewer was chosen in the case of conflicting reviews. All reviewers were anonymous for the authors of the articles, and the reviewers presented blind reviews. Every author received the reviewers' objections or recommendations. After receiving the improved (final) version of the manuscript and the author's comments, the Editorial Board of the conference evaluated each article.
All the papers of the international scientific conference "Economic Science for Rural Development" are arranged into the following four thematic volumes:

No 33 Finance and Taxes
New Dimensions in the Development of Society

No 34 Production and Cooperation in Agriculture

No 35 Marketing and Sustainable Consumption
Rural Development and Entrepreneurship
Home Economics

No 36 Integrated and Sustainable Regional Development

The publishing of the Proceedings before the conference promotes exchange of opinions, discussions, and collaboration of economic scientists on the international level. The research results included into the Proceedings are available worldwide to any interested person.

The Conference Proceedings are indexed in ISI Web of Knowledge, AGRIS, CAB Abstracts and EBSCOHost Academic Search Complete databases.

The Conference Committee and Editorial Board are open to comments and recommendations for the development of future conference proceedings and organisation of international scientific conferences.

We would like to thank all the authors, reviewers, members of the Programme Committee and the Editorial Board as well as supporting staff for their contribution organising the conference.

On behalf of the conference organisers
Ingrida Jakusonoka
Professor of Faculty of Economics and Social Development
Latvia University of Agriculture

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Contents

Elena Dubra, Anastasija Vilcina	EUROPEAN SOCIAL CONVERGENCE AND ITS IMPLEMENTATION IN LATVIA	14
Joanna Hernik	GREENWASHING – ESSENCE AND ANALYSIS ON A CHOSEN EXAMPLE	25
Zanete Garanti, Andra Zvirbule-Berzina	FACTORS AFFECTING THE FORMATION OF REGIONAL CLUSTERS IN LATVIA	33
Anda Zvaigzne, Inese Saulaja, Dzesija Zeiferte	LABOUR SUPPLY IN THE REGIONS OF LATVIA	43
Jadvyga Ciburiene	ORGANIC AGRICULTURE FOR SUSTAINABLE RURAL DEVELOPMENT: LITHUANIAN CASE	51
Modrite Pelse, Liene Zake	ECO OFFICE ACTION IN LATVIA	58
Adam Majchrzak	CONVERGENCE PROCESS OF AGRICULTURAL LAND STRUCTURES IN THE EUROPEAN UNION	67
Siim Maasikamäe, Evelin Jürgenson, Merit Mandel, Piret Veeroja	DETERMINATION OF VALUABLE AGRICULTURAL LAND IN THE FRAME OF PREPARATION OF COUNTYWIDE SPATIAL PLANS: ESTONIAN EXPERIENCES AND CHALLENGES	77
Liva Grinevica, Baiba Rivza	INTEGRATION OF YOUNG PEOPLE INTO THE LABOUR MARKET THROUGH PARTICIPATION IN BUSINESS SUPPORT PROGRAMMES	86
Karol Kukula	ZERO UNITARISATION METHOD AS A TOOL IN RANKING RESEARCH	95
Elzbieta Jadwiga Szymanska	REGIONAL IMBALANCES IN THE AGRICULTURAL DEVELOPMENT IN POLAND	101
Olga Pavuk	RETIREMENT ECONOMY WITHIN THE CONTEXT OF PROBLEMS OF DEMOGRAPHY AND THE LABOUR MARKET IN THE BALTIC STATES	110
Vilija Alekneviciene, Jurgita Baranauskiene	VALUATION OF PUBLIC PROJECTS BY THE METHOD OF COST-EFFECTIVENESS ANALYSIS	118

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Zinta Zalite, Anita Auzina, Toms Zalitis	ANALYSIS OF THE SOCIO-ECONOMIC VALUE OF FORESTS OWNED BY THE STATE AND OTHER OWNERS IN KURZEME AND VIDZEME STATISTICAL REGIONS	129
Zanete Garanti	IDENTIFYING TRADED CLUSTER INDUSTRIES IN LATVIA	139
Edgars Spruksts	FACTORS INFLUENCING STARTING UP A BUSINESS IN LATVIA	147
Alvydas Aleksandravicius, Asta Raupeliene	ASSESSMENT OF LITHUANIAN STRATEGIC PLANNING DOCUMENTS ON INFRASTRUCTURE DEVELOPMENT FOR NEW JOBS CREATION IN THE RURAL AREAS	155
Vilma Atkociuniene	DEVELOPMENT OF RURAL SOCIAL INFRASTRUCTURE BASED ON COMMUNITY NEEDS	165

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

EUROPEAN SOCIAL CONVERGENCE AND ITS IMPLEMENTATION IN LATVIA

Elena Dubra[1] Dr.oec., professor
Faculty of Economics and Management, University of Latvia
Anastasija Vilcina Dr.oec., professor
Faculty of Economics and Social Development, Latvia University of Agriculture

Abstract. The purpose of this research is to present an evaluation of the social convergence process in the EU and to designate eventual social development in Latvia in the context of the new strategy "Europe 2020". The strategic goals of the EU policy as well as the development challenges for improvement of the national economy well-being in the EU Member States and avoiding of socio-economic disparities are discussed in the paper. The aim of the study is to assess the social level in Latvia, priorities for its development, and social convergence process in order to reach the goals of "Europe 2020" strategy.

The main emphasis of this research lies in the complex approach to the social convergence theory and the EU cohesion policy implementation in Latvia.

The research methodology is based on the survey of the EU cohesion policy and convergence theory and the analysis of the EU strategies' impact on social trends in Latvia. The authors of the research have employed monographic method, analysis and synthesis, statistical analysis, and graphic method. The research investigates major information flows for estimation of social situation in Latvia and present information on variables and various different socio-economic indicators in the EU countries, though, especially in Latvia.

The main results and conclusions reflect the overall social-economic situation in the EU and Latvia, and reveal the influence of the current and future European cohesion policy on social development of Latvia. The discussion consists of socio-economic situations' analysis in the EU and Latvia in the context of the future strategic goals of "Europe 2020" and social progress in Latvia.

Key words: convergence, social development, cohesion policy, strategies.

JEL code: E24, F15, F42, I38, O19, O52

Introduction

A major focus in this study is devoted to the analysis of social convergence theory and the EU cohesion policy as well as the EU strategies' influence on the social development in Latvia. This study contains and discusses changes of key concepts related with the convergence and cohesion policy of the European Union and compares objectives and general outlines of the period 2014-2020 in the framework of Europe as a whole as well as its impact on Latvian socio-economic and living conditions.

[1] Corresponding author. Tel.: + 371 67034762
E-mail address: elena.dubra@lu.lv

Today's EU cohesion policy is the EU development policy and provides original evidence of the evolution of regional and social disparities in Europe. The cohesion policy is designed to reduce socio-economic disparities in the development capacity and improve social situation of the regions and the EU Member States. The EU cohesion policy is trying to provide policy recommendations for future development of states and it is important to explain how to reduce regional disparities in income levels alluding to the fact that the distribution of income should become more equitable over the time.

The current debates on Europe's economic, financial, and budgetary situation are affecting the financial perspectives of the current community budget 2014-2020. The president of the European Commission José Manuel Barroso at the European Parliament plenary debate of the European Council on 24-25 October 2013 determined the main goals of the EU policy:

"Europe 2020 is the EU's growth strategy for the coming period. In the changing world, we want the EU to become a smart, sustainable, and inclusive economy. These three mutually reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity, and social cohesion. In particular, the Union has set five ambitious objectives – on employment, innovation, education, social inclusion, and climate/energy – to be reached by 2020. Each Member State has adapted its own national targets in each of these areas. Concrete actions at the EU and national levels underpin the strategy" (Barroso J.M., 2013).

The authors will discuss different approaches that have been used in the literature and the main reasons why their results differ so much from each other. The literature review is also an opportunity for providing the analysis of the EU states' convergence and cohesion policy progress in the light of their intended purposes. The discussion will also lead the reader to question the opportunity of sticking to simple income convergence analysis in the EU Member States. In this context, the paper will try to introduce the reader to the newest proposals for the EU convergence and cohesion policy in 2014-2020 and its implementation in Latvia.

The aim of the research is to assess social level in Latvia and its development in the context of reaching the goals of "EUROPE 2020" strategy. The aim of the research has set the following **tasks**: 1) to introduce the main problems of the social convergence process between the EU countries and Latvia; 2) to describe social eventual development in the context of the EU strategic targets; 3) to identify the main priorities for improvement of social situation in Latvia in order to reach the goals of "Europe 2020" strategy.

The research methods employed in the present research are the monographic method, analysis and synthesis, statistical analysis, and the graphic method.

Research results and discussion

European convergence and its influence on the social development of the EU countries

The success of the integration process of the new EU Member States is reflected by their convergence performance. These tendencies are of special importance when considering the further enlargement of the Eurozone. The new convergence methodology considers the experiences gained in real convergence in the EU countries and the convergence catch-up processes and their future prospects. In particular, the convergence theory analysis focuses on the sustainability of social convergence

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

processes. The possible trends of longer-term growth and convergence scenario are presented based on the qualitative analysis representing the supply side approach (R.Barro, X.Sala-i-Martin, 2004). A recent analysis of the EU convergence policy made an attempt to asses whether the distribution of income across the EU-27 has become more equitable in the last years, by analysing the dispersion of GDP per capita expressed in purchasing power standards (PPS) throughout country members of the European Union. However, economic growth theory provides two types of the convergence: σ-*convergence* (sigma) and β-*convergence*(beta) (Barro R., Sala-i-Martin X., 2004).

The σ-*convergence* serves as an indicator to measure weather the distribution of income across the regions or countries has become less uneven over the time. In contrast, the β-*convergence* attempts to describe the mobility of income within the same distribution and predominantly serves to find out whether the convergence occurred because of poorer regions and countries (Marzinoto B., 2012).

Main calculations and trends in catching up in the new EU Member States can be analysed methodologically by this means growth accounting through a production function approach and the calculation and interpretation of the catch-up rate (Halmai P., Vasary V., 2010).

The relationship between the GDP growth and the level of income is considered as *β- convergence* scenario. Convergence reflects the measure of progress, while catch up measures the distance to be travelled. The pace of catching–up usually relates to β-convergence and is expressed as a catch-up rate ($R_{Catch\text{-}up}$), which is calculated as follows:

$$R_{Catch-up} = 100 \cdot \frac{\Delta(y_{it} - y_t^*)}{(y_{it-1} - y_{t-1}^*)} \quad (1)$$

In the equation:

y - reflects the level of GDP per capita as PPS for country i at a time t;

y_t* - is the average for the y_t of the EU-27;

Δ - indicates the difference between t and t-1;

y_t* - is the weighted average of the EU-27.

It is calculated based on historical actual growth rate and serves as a framework for ex-post analysis of the catching up dynamism. This, nevertheless, allows making future projections for the potential growth rates.

Living standards can be compared by measuring the price of a range of goods and services in each country relative to income, using a common national currency called the purchasing power standard (PPS). Comparing GDP per capita in PPS provides an overview of living standards across the EU. The EU strives to improve living standards by protecting the environment, encouraging job creation, reducing regional disparities, and connecting formerly isolated areas by developing cross-border infrastructure. This indicates the need for more structural reform to remove rigidities in the allocations of resources which is essential in order to raise living standards. Table 1 illustrates the real situation in the EU countries by the main convergence indicator the GDP per capita during the past years.

The convergence in the EU during the past decades showed a relatively steady pace. The GDP level, economic structure of the national economy, the total consumers' income and demand levels, labour force skills, and education influence the social situation. At the same time, the future projection is based

on the GDP potential growth rate, while the present forecasts of social development are based on GDP per capita by purchasing power standard.

Table 1

GDP per capita in the EU countries (GDP in PPS EU27=100, 2012)

Country	GDP per capita in PPS	Country	GDP per capita in PPS
Bulgaria (BG)	47	Cyprus (CY)	94
Romania (RO)	48	Spain (ES)	96
Latvia (LV)	**60**	Italy (IT)	102
Croatia (HR)	61	United Kingdom (UK)	105
Poland (PL)	65	France (FR)	109
Hungary (HU)	67	Finland (FI)	116
Lithuania (LT)	68	Belgium (BE)	120
Estonia (EE)	69	Germany (GE)	123
Slovakia (SK)	75	Sweden (SE)	125
Portugal (PT)	77	Denmark (DK)	126
Greece (EL)	80	Ireland (IL)	129
Czech Republic (CZ)	81	Netherlands (NL)	129
Slovenia (SI)	84	Austria (AT)	129
Malta (MT)	86	Luxembourg (LU)	226

Source: authors' calculations based on the Eurostat and European Commission data 2013, European Forecast Autumn 2013, EUROPEAN ECONOMY 7/2013

The EU integration and globalisation processes and their further expansion affect this theoretical and widely accepted assessment. Social conditions and employees also become more and more aware of the possibilities offered by the global market. It requires not only a structure of national social models but also a discussion on the strategic choice of countries concerning the social policy. The long run forecasts of social development for the EU cohesion countries are shown in Table 2.

Table 2

Development of the level of GDP per capita in the cohesion countries in the long run

GDP in PPS	2015	2020	2030	2040
EU-27	100.0	100.0	100.0	100.0
Bulgaria	47.0	50.0	54.8	59.7
Romania	52.2	56.5	61.4	65.5
Latvia	**74.4**	**76.7**	**86.8**	**88.0**
Lithuania	77.5	84.1	88.4	89.6
Estonia	89.0	92.9	99.3	107.0
Poland	63.3	66.0	72.6	73.3
Czech Republic	92.5	96.2	97.9	97.0
Hungary	68.7	71.6	76.5	79.5

Source: authors' calculations based on the quantitative analysis of the EU Ageing Reports 2012-2013; Halmai P., Vasary V., 2010

The European Union is undergoing a process of changes that have significantly altered the socio-economic structure of societies. The main efforts referred to the improvement of the quality of life of some groups of society have increased transition costs for social inequality reduction.

In the EU, much attention is currently being paid to the consequences of inequality, such as poverty level and lack of social cohesion, and policy interventions generally tend to focus on how to redress these outcomes through tax instruments instead of addressing the underlying causes. However, relying solely on more taxing and more spending can only be a temporary measure which is not a solution to redress inequality in the long run. The EU should make available better and clearer statistical information on inequalities in Europe. The Eurostat should regularly publish data on inequality problems

and should calculate Gini index. European cohesion policy should pay more attention to the countries with minimum income level and high income disparity in order to reduce inequality among the EU countries and improve social cohesion in the EU Member States.

The macroeconomic and social development scenario in Latvia is based on the assumption that the situation in the eurozone will continue stabilising and the growth in the eurozone will gradually recover from the 2014. Therefore, if the growth resumes in the eurozone, external demand for Latvian exports of goods and services is expected to increase, thus promoting further economic and social development of Latvia. The GDP of Latvia in the medium term is expected to be equal to the potential growth of Latvia (Regional Policy–Inforegio, 2012).

The EU strategies' influence on the social development in Latvia

The main goals of social development, prescribed by the EU strategy "Europe 2020", influence the economic strategy of Latvia "EU 2020" and the "National Development Plan of Latvia for 2014-2020". These documents are medium-term strategic planning strategies where social and regional development priorities and sources of finance for their implementation are mutually coordinated. The Europe 2020 strategy, adapted by the European Council on 17 June 2010, is the EU's new ten-year strategy for growth and job creation. It puts forward three mutually reinforcing priorities to make Europe a smarter, more sustainable and more inclusive place to live:

- it envisions the transition to **smart growth** through the development of knowledge-based economy, research and innovation;
- the **sustainable growth** objective relates with the promotion of more resource-efficient, greener and competitive markets;
- the **inclusive growth** priority encompasses policies aimed at fostering job creation and poverty reduction.

The European Union Future programme (2014-2020) has set ambitious objectives to be reached by 2020 in five main areas: *employment, innovation, climate change, education,* and poverty*.*

Table 3

Europe 2020 and Latvia's targets

EU Member States' targets	**EU headline targets**	**Latvia's targets**
Employment rate	75%	73%
R&D in % of GDP	3%	1.5%
CO_2 emission reducing targets	-20%	17%
Renewable energy	20%	40%
Efficiency-reduction of energy consumption	20%	0.67%
Early school leaving	10%	13.4%
Tertiary education	40%	34-36%
Reduction of population at risk of poverty or social exclusion in the number of persons	20.000. 000	121.000

Source: authors' calculations based on the European Commission Europe 2020 targets, 2013

The "National Development Plan of Latvia for 2014-2020" provides the main development directions of Latvia and tasks for achieving further objectives. The strategic objective of this Plan is education and knowledge for the growth of the national economy and technological excellence. The following priorities

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

have been established for the achievement of the set objective: an educated and creative individual; technological excellence of companies; and the development of science and research. The main economic objective of this Plan is to facilitate a balanced and sustainable development of the country and to ensure improvement in the social indicators of Latvia (National Development Plan…, 2012).

The EU strategy objectives and targets are further supported for the development of Latvia's social level in order to reach the goals of "Europe 2020" strategy. The economy of Latvia continued growing at a rapid pace in 2012, and the gross domestic product increased by 5.2% compared with the previous year. It was the fastest growth among the European Union Member States. The data of the Latvian Statistical Bureau (hereinafter CSB) show GDP increase by 4.2% in 2013 9 m to 2012 9 m. The strong economic growth in 2012 and 2013 was based on both external and domestic demand. The National Reform Programme of Latvia for the implementation of the "Europe 2020" strategy and the Convergence Programme of Latvia describe the medium-term and long-term macroeconomic scenario and reflect the main macro-structural bottlenecks of Latvia and the key measures as well as national quantitative targets of Latvia for 2020 in the context of the "Europe 2020" strategy.

In Latvia, social policy situation continues improving. At the same time, employment will grow slower than the economic growth, as the output is mainly based on the rise of productivity. The share of job seekers dropped to 11.8% in Q3 2013 which is by 1.9 percentage points lower than a year ago. The registered unemployment rate in 2013 reached the lowest point since 2009 constituting 9.3%. The dynamics of inflation showed a tendency to decline significantly to -0.4% in November 2013. The at-risk-of-poverty rate or the share of the population below the poverty line increased during the period when the total income of the population was increasing substantially and the unemployment rate was comparatively low. The at-risk-of-poverty rate in Latvia has increased from 19.2% in 2005 to 25.7% in 2009 and decreased up to 19.4% in 2012 (Statistical Yearbook of Latvia and the CSB data, 2013). Economic growth and increasing employment have a positive impact on the poverty risk of employed persons. Now in Latvia, children aged 0-17 years are exposed to the highest risk of poverty – 24.7%. According to the assessment done by the experts of the Ministry of Welfare, the income of persons living close to the at-risk-of-poverty threshold grew slower than the average income level. They were exposed to a high risk of getting under the poverty risk threshold. This largely applied to the recipients of small pensions and other individuals with low income, particularly families with children.

There are the following challenges to reduce the high poverty rate in Latvia:

- income inequality, including low income of the employed and rather high tax burden on low income employees ('working poor' problem);
- limited budget resources in the upcoming years;
- insufficient availability of different services and lagging-behind territories in terms of service provision.

Increasing income from paid work, especially highlighting families with children as a special target group, is one of the key priorities in reducing poverty and social exclusion in Latvia. These measures comply with the priority of the Annual Growth Survey 2013 to tackle unemployment and social consequences of the crisis, facilitate the achievement of employment, poverty and social exclusion

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

targets of the Europe 2020 strategy and the implementation of the flagship initiative European platform against poverty (A Decent Life for..., 2013.).

During the development progress of Latvian economy in 2011-2013, the social structure has undergone not only quantitative changes but also qualitative changes decreasing disproportions among the social indicators of national economy, which generates a range of problems in implementing national social development programmes. Development processes underway in the economy of Latvia comply largely with the guidelines of strategic documents on the development of national economy and social situation in the country, reflecting goals and tasks defined by the EU programming documents for the areas of social development in the EU and Latvia.

In order to improve the information support, researchers offer a unified flowchart of the research information for the social situation estimation and forecasts in Latvia as the EU Member State which is illustrated in the prepared scheme of information flows (Figure 1).

The current socio-economic situation in Latvia and forecast for its development in the coming seven years (2014-2020) include the following themes:

- the quality of the socio-economic development in Latvia;
- the main directions for the achievement of the social situation improvement and Latvian social convergence into the EU;
- resources of the European Social Fund and the European Regional Development Fund;
- solution to the problems related with poverty and income disparity;
- labour market and education policy problems and solutions for their alignment;
- forecasts on economic migration.

The increase in the private consumption will depend on changes in personal income. It is planned to decrease gradually social and personal income taxes in Latvia from 2014 and these changes can increase personal income and foster the growth of private consumption. However, still high unemployment rate does not allow increasing wages, and in the medium-term, the changes in wages are unlikely to exceed the increase in productivity. The main principle for increasing of the living standards and welfare can be defined as observance of real proportions among the indicators of productivity, wages, and annual growth of inflation:

Principle for welfare increasing

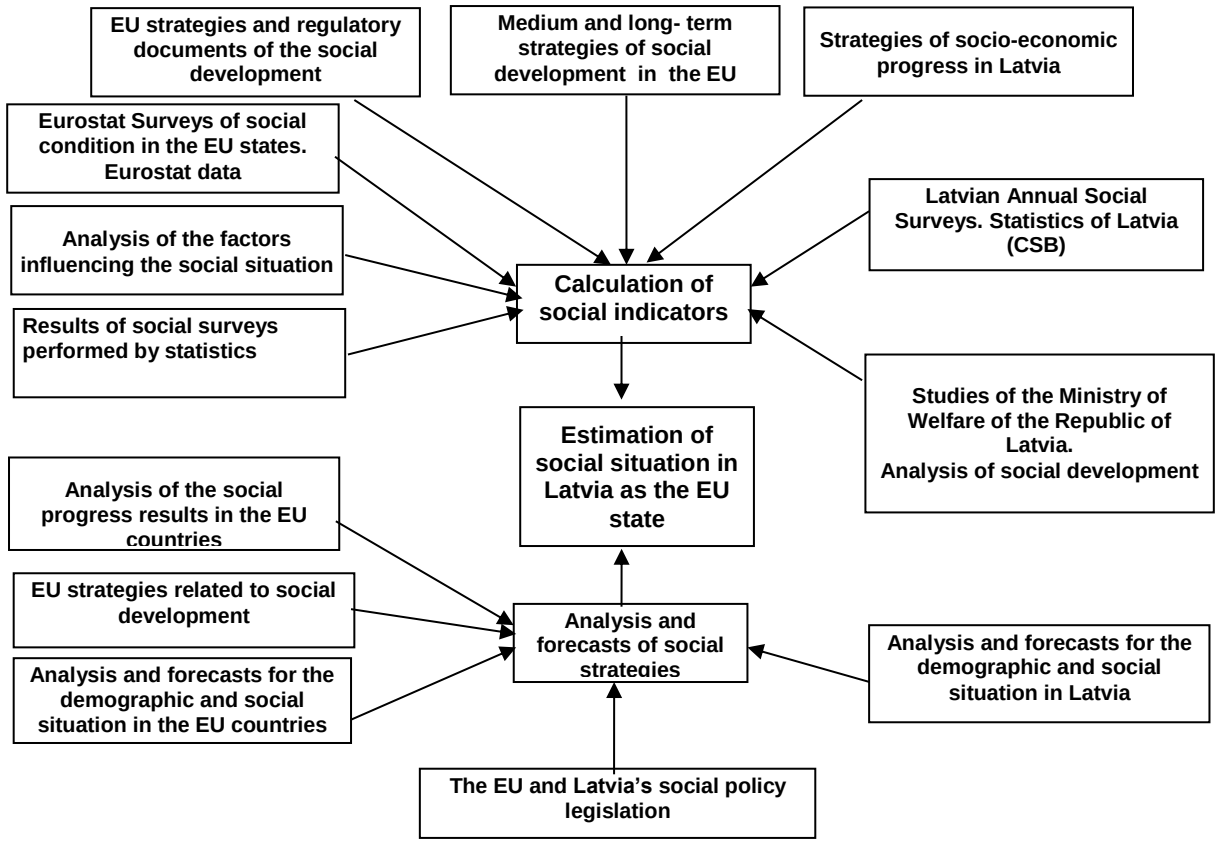
$$\Delta(Y / N) > \Delta W > \Delta \Pi, \quad (2)$$

$\Delta(Y/N)$ –annual growth rate of productivity, %;

ΔW –annual growth rate of wages, %;

$\Delta \Pi$ - annual growth rate of inflation, %.

The European Commission in 2013 prepared specific recommendations for each country for analysing its economic situation and providing recommendations on measures it should adapt over the coming 18 months. They are tailored to the particular issues the Member State is facing and cover a broad range of topics: the state of public finances, reforms of pension systems, measures to create jobs and to fight unemployment, education and innovation challenges etc. The final adaptation of the country-specific recommendations prepared by the Commission is done at the highest level by national leaders in the European Council (Country-specific Recommendations…, 2013).



Source: authors' construction based on the social economics theory

Fig.1. **Scheme of information flows for social situation estimation in Latvia**

The European Commission has made six country specific recommendations (CSRs) for Latvia aimed at help it improve socio-economic performance in the areas of: *sustainable public finances, youth and long term unemployment, poverty reduction, higher education and research systems, energy market and efficiency, judiciary reform.*

Latvia has prepared the second Progress Report on the Implementation of the National Reform Programme of Latvia within the "Europe 2020" Strategy on April 2013. This Progress Report was developed taking into account the main trends of "National Development Plan of Latvia for 2014–2020". In the medium to long term, Latvia faces a number of challenges, in particular, to maintain sound fiscal policy and reduce the level of income disparity. Other challenges relate with the quality of vocational education, social assistance, R&D spending and innovation performance, energy and the efficiency of the judiciary.

European Structural Funds for 2014-2020 will provide an important source of public investment to support Latvia in meeting these challenges. In the programming period 2014-2020, the achievement of the following Europe 2020 strategy targets is implemented by the support of the European Social Fund: to improve competitiveness, education system; to foster employment; to implement labour market reforms to ensure flexicurity as well as promoting social inclusion to reduce poverty. The EU Funds financing for the achievement of the "Europe 2020" strategy targets essentially promote the competitiveness of national economy and Latvia's socio-economic convergence in the EU.

The government of Latvia has determined the thematic allocation of the EU Funds policy and financing for the programming period 2014–2020. The allocation of financing is based on the priorities, directions of activities and tasks of the "National Development Plan of Latvia for 2014-2020", and it is closely linked to the basic needs of the economy of Latvia, taking into account the GDP growth rate, investment planning for all the thematic objectives, activities in the social policy reforms, improving of education system, and labour market formation as the priority directions.

Conclusions, proposals, recommendations

1. "Europe 2020" Strategy and the European Commission's proposals for socio-economic convergence of the EU Member States have been considered as one of the most important economic development targets in the EU, concentrating national resources and the EU funds on the areas and sectors where they can make the most important progress.
2. The EU cohesion policy is the EU development policy and provides new evidence on the evolution of regional and social disparities in Europe. The cohesion policy is designed to reduce socio-economic disparities in the development capacity and to improve social situation of the regions and the EU Member States, including its large single market and its currency - euro.
3. The European Union convergence during the last years showed a relatively steady pace. The inverse relationship between the growth and the level of income is considered β- convergence. If this factor is present, poorer countries get closer to the richer ones. Significant condition for the β- convergence ratio or catch-up processes increasing is economic growth, social policy development, and country-specific factors' activities.
4. The EU strives to improve living standards by protecting the environment, encouraging job creation, reducing regional disparities, and connecting formerly isolated areas by developing cross-border infrastructure. This indicates the need for more structural reform to remove rigidities in the allocation of resources which is essential in order to raise the living standards.
5. The strategies of European national economies are exposed to the influence of several internal and external factors. Latvia's participation in the EU convergence process can support the improvement of sustainable development, job creation, economic and competitiveness growth, and the quality of life.
6. Socio-economic development of Latvia reflects the goals and tasks defined by the EU programming documents and social strategies. In order to improve the information support, researchers have developed a unified flowchart of the research information to estimate social situation and prepare forecasts for Latvia as the EU Member State by the scheme of information flows.
7. The macroeconomic and social development scenario in Latvia 2014-2020 is based on the assumption that the situation in the eurozone will continue stabilising, and the growth in the eurozone will gradually recover from the 2014. Therefore, the external demand for Latvian exports of goods and services is expected to increase as the growth resumes in the eurozone, thus, promoting further economic and social development of Latvia.
8. The social conditions and employees in Latvia also become more and more aware of the possibilities offered by the global EU market. It requires not only a structure of national social models but also strategic choice of the countries concerning their social policy. The situation in the social policy of Latvia

continues improving. The long-run European Commission forecasts for Latvia showed increasing tendency of GDP per capita at (PPS) from 62.0% in 2013 to 76.7% in 2020 and up to 86.8 % in 2030 of the EU-27 average level.

9. It is necessary to have a pragmatic approach to financing for investigation of Latvia's future social development and governmental decision taking in order to create employment and reduce poverty level and social disparities of the national economy.

10. The European budget spending will have to be more effective, in particular 2014-2020 for promotion economic, social, and regional cohesion at the national and the EU levels. In order to achieve socio-economic growth and social convergence goals, Latvian government must identify the main social priorities and decide where the money will deliver the best results with high social efficiency.

11. The improvement of Latvia's social policy is, in general, connected with investment flows, new technologies, and productivity growth. In 2014-2020, important priorities of Latvian economy will be the development of social legislation, the increase of income, the improvement of pensions' policy, and the development of education system and labour market.

12. Taking into account the actual socio-economic problems in the EU countries, the European cohesion policy should pay more attention to countries with minimum income level and high disparity of income to reduce inequalities between the EU countries and improve social convergence among the EU Member States.

Bibliography

1. A Decent Life for All: Ending Poverty and Giving the World a Sustainable Future, COM (2013) 92 final (p.6). Retrieved: http://ec.europa.eu/europe 2020/. Access: 09.12.2013.
2. Barro, R.J., Sala-i-Martin, X. (2004). *Economic Growth*. 2nd ed. England, London: The MIT Press, p. 654.
3. Barroso, J.M. (2013). European Parliament Plenary Debate on the European Council. 24-25 October 2013. Retrieved: http://ec.europa.eu/eu2020/pdf. Access: 20.11.2013.
4. Becker, E., von Ehrlich, M., Fenge, R. (2008). Going NUTS: the Effect of EU Structural Funds on Regional Performance. *CESifo Working Paper*, pp.24-95.
5. Checherita, C., Nickel, C., Rother, P. (2009). The Role of Fiscal Transfers for Regional Economic Convergence in Europe. *ECB Working Paper*, pp.10-29.
6. Country-Specific Recommendations-Final Version, Approved by the Council. European Commission (2013). Retrieved: http://ec.europa.eu/europa2020/europa-2020-in-your-country/latvia/. Access: 05.11.2013.
7. Dall'erba, S., Le Gallo, J. (2008). Regional Convergence and the Impact of European Structural Funds 1989-1999: A Spatial Econometric Analysis. *Papers in Regional Science*, 87(2), pp. 219-244.
8. Dall'erba, S., Percoco, M., Piras, G. (2008). The European Regional Growth Process Revisited. *Spatial Economic Analysis*, 3(1), pp. 7-25.
9. Directorate-General for Economic and Financial Affairs. European Forecast Autumn 2013. EUROPEAN ECONOMY 7/2013. Retrieved: http://ec.europa.eu/economy_finance/ publications/. Access: 12.12.2013.
10. Directorate-General for Economic and Financial Affairs. Convergence Report 2013 on Latvia 05.12.2013. European Economy Nr. 3/2013. Retrieved: http://ec.europa.eu/ economy_finance/publications/. Access: 10.12.2013.
11. Economic Development of Latvia "Europe 2020". Strategy Presentation, 7 June 2010. Ministry of Economics Republic of Latvia. Retrieved: http://www.em.gov.lv. Access: 9.12.2013.
12. Esposti, R., Bussoletti, S. (2008). Impact of Objective 1 Funds on Regional Growth Convergence in the European Union: A Panel-data Approach. *Regional Studies*, 42(2), pp. 159-173.
13. Europe 2020 - A Strategy for Smart, Sustainable and Inclusive Growth, COM(2010) 2020 final, Brussels. Retrieved: http://ec.europa.eu/europa 2020/. Access: 11.12.2013.

14. European Commission (2013). Europe 2020 Targets. The 5 Targets for the EU in 2020. Retrieved: http://ec.europa.eu/europe2020/targets. Access: 09.12.2013.
15. Eurostat Yearbook (2013). Retrieved: http://epp.eurostat.ec.europa.eu/. Access: 17.12.2013.
16. Gaspar, V., Leite, A.N. (1994). *Cohesion and Convergence: The Economic Effects of EU Structural Transferts*. Economia, pp. 87-108.
17. Halmai, P., Vasary, V. (2010). Real Convergence in the New Member States of the European Union. *The European Journal of Comparative Economics*, Vol.7, No 1, pp.229-253.
18. Ifo Institute, CESifo World Economic Survey, A Quarterly Publication on the "World Economic Climate". (2010-2013). Retrieved: http://www.cesifo-group.de/fbo/login/. Access: 15.11. 2013.
19. Lein-Rupperecht, S., Leon-Ledesma, M., Nerlich, C. (2007). How is Real Convergence Driving Nominal Convergence in the New EU Member States? *European Working Paper,* Series No 82, pp. 21-30.
20. Marzinotto, B. (2012). *The Growth Effects of EU Cohesion Policy: A Meta-Analysis*. Working Paper, 2012/14, Bruegel, p. 23.
21. National Development Plan of Latvia for 2014-2020 (2012). Retrieved: http://www.pkc.gov.lv/NAP2020/20121220. Access: 10.12.2013.
22. Regional Policy – Inforegio. (2012). Retrieved: http://ec.europa.eu//regionalpolicy/what/ europe2020/index_en.cfm. Access: 15.11.2013.
23. Report on Economic Development of Latvia. June, 2013. Riga: Ministry of Economics of the Republic of Latvia. Retrieved: http://www.em.gov.lv. Access: 12.12.2013.
24. Statistical Yearbook of Latvia 2012. CSB Data (2013). Retrieved: http://www.csb.gov.lv/. Access: 27.12.2013.
25. Technical paper from the CPMR General Secretariat (2012). Conditionality in Regional Policy after 2013: the Challenges for the Regions. Retrieved: http://www.crpm.org/pub/ docs/. Access: 27.11.2013.
26. UNDP, United Nations, Human Development Report 2013. Human Development Index. [online]. Retrieved: http://www.un.org/en/statistics/hdi. Access: 10.12.2013.
27. World Economic Outlook Update (2013). [online] Retrieved: http://www.imf.org/ extend/2013. Access: 16.12.2013.

GREENWASHING – ESSENCE AND ANALYSIS ON A CHOSEN EXAMPLE

Joanna Hernik [1], PhD[+]
[1] Faculty of Economics, West Pomeranian University of Technology in Szczecin, Poland

Abstract. The image of a company and its offer stems from characteristics that are highlighted in promotion as well as from everything that a potential recipient of information is able to find on the market. Building the image of ecologically sensitive and responsible business may affect not only its perception but also purchase decisions of customers. It seems, however, that in recent years, the statements and symbols relating with ecology, nature, and sustainable development are excessively exploited. Manifestation of this trend is greenwashing, defined as an apparent care for the environment by suggesting that the product is environmentally friendly (or natural), or a company is ecologically sensitive which is not entirely true. Nevertheless, through such activities an image of a socially responsible business may be built.

The purpose of this article is to show the essence of greenwashing on a selected example, in this case, an organic washing liquid and water softener. The article is a case study; and the main research method used, herein, is a comparative and documentary analysis.

Following this analysis, it was found that the discussed example was a greenwashing case because information provided by the producer was partly false, irrelevant, incomprehensible, or omited important issues.

Key words: creation of image, consumer behaviour, ecology, promotion, responsibility.

JEL code: M14, M31

Introduction

Protection of the environment and the pursuit of sustainable development arise from too expansive human activity and desire to preserve Earth's resources for future generations.

However, this willingness on the side of business is often only declarative. It means that they take apparent actions, or simply do nothing, informing about a broad commitment at the same time (Zatwardnicka-Madura B., 2013; Witek L., 2013; Parguel B., Benoît-Moreau F., Larceneux F, 2011). On the contrary, 76% of leaders believe that success in business in the future will be connected with transparency and commitment (Worldwide Report, 2010), so surely some companies come with conviction to pro-environmental actions and will lead towards more responsible business. Today, it manifests itself in environmental programmes or broader activities known as CSR (corporate social responsibility).

The term *greenwashing* was created by an environmentalist and activist Jay Westerveld in 1986. Then, in one of the hotels, he read information that a hotel asked for towels' reuse, because thanks to this less gallons of wash water would be used and important natural resource would be rescued (Motavalli J.,

[+] Corresponding author. Tel.: 0048 91 449 69 08; fax: + 0048 91 449 69 50
E-mail address: Joanna.Hernik@zut.edu.pl

2011). Westerveld wrote then an article about the apparent environmental activities, calling them greenwashing.

Environmental issues were noticed, however, much earlier than the term greenwashing appeared. It is worth mentioning, for example, that 22 April 1970 was the first Day of the Earth, which was a result of concerns related with wars, consumerism and destruction of natural resources (www.earthday.org). Currently, greenwashing refers to the practice of apparent efforts of protecting the environment and suggestion that a company bears some costs of these activities, when in fact it even earns. Hence, greenwashing shows a market strategy of a company in false light; thus, it is a lie (www.springerreference.com).

The aim of the article is to show the characteristics of greenwashing on a selected example. The main research method is a comparative and documentary analysis. This article is a case study, and shows the practice of market activity confronted with the idea of forming a pro-ecological image of a product and company.

Creation of the image

The image of a company and its offer is a result of different characteristics highlighted in promotion, and also a result of what a potential recipient of information is able to find on the market. Therefore, the history of a company, its products along with packaging, affect an image and experience of other consumers as well as commercial and statistical information. From a company's point of view, it is important that actual market activities and information activities are consistent because only then will it build a positive image effectively. The concept of image building but also the overall philosophy of a company based on social and environmental needs, is known as corporate social responsibility (CSR). It is defined as a plan of running a company under which business activities are integrated with social and environmental issues on a voluntary basis (Nyilasy G., Gangadharbatla H., Paladino A., 2013).

Therefore, if a company is obliged by law to manage its waste adequately, then you cannot call it CSR; but if a company voluntarily limits production of waste, or tries to reuse it, then one may talk about social responsibility. Such a good image, for example, can be built by "green promotion", understood as promotion of environmentally-friendly products. One could clarify this notion giving the concept of Banerjee, Gulas and Iyer (1995) who thought that a message should meet at least one of the criteria given below:

1) clearly refer to the relationship between product and environment;
2) promote a green lifestyle;
3) show a given company as an environmentally responsible one.

Green promotion, however, from definition talks about actual relationships of a product (or company) with nature. So, it differs from greenwashing as it contains an element of truth. While greenwashing is attributed mostly to advertising, in this article the analysis will be focused on relationships between an offered product and the environment.

Modern consumers are increasingly aware of negative impacts of human activity on the environment (Witek, 2013); hence, they want to have the feeling that they do not cause degradation, and even may do something good.

It is significant that more often they think not only about organic food but also lower energy and water consumption, minimising waste from households, waste segregation etc. Thus, in response to the trend,

there is more and more natural food on the market but also other products described as environmentally friendly. Often, however, these compounds are false, which is analysed in the following part of the article. Building the image of environmentally sensitive, responsible business, can affect not only its perception but also purchase decisions of customers. They can react positively (buying more often) in case of socially desirable behaviour of a company and react negatively (for example, boycotting products) in case of irresponsible behaviour. Especially at a time when consumers evaluate pro-social actions as selfish, or associated only with building goodwill on financial markets, one can expect negative reactions. The question of how a particular company behaves is also important to employees, suppliers and public authorities. One of the companies producing organic products and emphasising the care for the environment is a German corporation Sonett (Figure 1).

Source: author's construction, retrieved: http://www.sonett.eu/index.php?lang=enl, Access: 03.01.2014

Fig. 1. **Information about the Sonett company**

In practice, a particular company's impact on the environment results from three aspects: the specific nature of operations, introduced regulations, and organisation of processes (Delmas M.A., Burbano V.C., 2011). This means that the pro-environmental behaviour should be assessed in the context of close businesses or one industry, as a comparison assumes similarities from above. However, one should assume that certain areas are directly related with harmful economic activity (chemical, cosmetic, or mining industry); hence they are vulnerable to sceptical assessments, and it is difficult to talk about ecological image, although the implementation of CSR is very much possible.

The essence of greenwashing

It seems that in recent years the terms relating with ecology, nature, and sustainable development, have become overexploited. In the view of the effects of global warming, disappearance of species, depletion of natural resources, almost everyone wants to be "eco". This can be seen in advertisements and other promotional materials as well as on different products' packaging.

While analysing information about activities of companies, one should pay attention to whether information on characteristics of a product is true, if placed symbols and labels are honest, or highlighted information is relevant, and if statements and symbols suggest the actual relationship with nature.

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

In particular, one should note if a manufacturer:

1) defines a product as eco, or "green" using a full analysis of the components, emphasising some and excluding others;
2) provides information that is difficult to verify;
3) emphasises expressions, statements that are vague, or may be misunderstood by consumers;
4) writes accurate information but which is not relevant to consumers seeking eco-friendly products;
5) suggests that something is the lesser evil;
6) gives false information on the functioning / use of the product;
7) composes labels whose aesthetics suggests relationships with nature or ecology (The sins of greenwashing, 2012).

If reasoning leads to the conclusion that the decoded information has little in common with reality, then one has to deal with the practice of greenwashing.

Research results and discussion

Manifestations of greenwashing can be found quite often in each area. A product called *lavender ecological washing liquid* produced by Sonett company (Figure 1) will serve as a case study in this article. The main component of the liquid is rapeseed oil. According to the manufacturer, "Soap made of rapeseed oil is very effective in washing and removing stains but gentle to fabrics. Thanks to surfactant plant compounds, cleaning action of soap is used to the maximum extent even in water with a higher degree of hardness and low temperatures of 30-40°C. The product is:

- especially useful for laundering in hard, clay water;
- for white and coloured fabrics;
- undergoes full biodegradation (www.ecoshop.com.pl).

Source: author's construction, retrieved: http://www.sonett.eu/index.php?id=30&lang=en, Access: 03.01.2014

Fig. 2. **Information about the ecological liquid produced by Sonett**

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Immediately, however, below the characteristics of product, the same manufacturer recommends concurrent use of a water softener when the water is very hard or hard; otherwise, the washing effect will be inadequate! Therefore, for ecological washing, one needs water, liquid detergent and a softener, and this will be a subjected to a more detailed analysis. Let us look at washing liquid first - an analysis of the product is presented in Table 1.

Table 1

The suggested and real characteristics of the organic washing liquid

No.	Feature described by manufacturer	Evaluation of a feature in practice
1	Liquid for each type of water, including hard	This is not true because manufacturer recommends a hard water softener
2	For colour and white fabrics	Irrelevant immaterial information, there are no other fabrics
3	Undergoes complete biodegradation	Biodegradation is conditional - must meet a number of conditions
4	The primary component is rapeseed oil	Production of rapeseed oil is not environmentally friendly

Source: author's construction

As mentioned, one can talk about greenwashing if information provided by a manufacturer is inaccurate, irrelevant, incomprehensible, or omits important issues. In Table 1 we have all these situations. As for the use of the product - manufacturer itself denies the information given in an introduction of the product leaflet since it indicates that to wash clothing; the water softener is needed, and so washing liquid alone is not enough. It is also not true that the use of the liquid is associated with an automatic biodegradation, as biodegradation involves the biochemical decomposition of organic substances by saprobionts (mainly bacteria and fungi) but also protozoa, actinomycetes, algae, and worms, to simple inorganic compounds.
The most common use of biodegradation in practice is emergency filters in biological sewage purification plants and biological ponds, used for fermentation treatment of waste. As a result, it is necessary to ensure appropriate conditions for microbial performing biodegradation if this process should take place - keep the right temperature processes and remove toxic for biodegradator substances from wastewater (e.g. detergents, pesticides). If sludge and wastewater does not go to prepared reservoirs, there will be no biodegradation (www.pl.wikipedia.org). In addition, the manufacturer of the product does not know that *biodegradation* term is used in relation with rather harmful substances; the term *mineralisation* should be used with regard to neutral products. Finally, the most important issue in the undertaken analysis is the assumption that rapeseed oil - the main component of the washing liquid - is an ecological product. And at this moment one should ask: How are such oils produced?
Of course, for rapeseed oil production, ripe seeds are needed: one should collect them, clean, and after purification - remove all pods, shells, husks, hairs and sprouts (natural seeds' elements). Then, the prepared seeds are grounded in special mills. And so far the process can be called environment-friendly. However, further, there is a conditioning process - it involves heating shredded material in optimum moisture level, and then drying. By heating, the contents of cells expands which results in membranes breakage and release of the oil. After the extraction of oil, refining takes place and it consists of several chemical and physical processes such as:

1) alkaline deacidification with sodium hydroxide;

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

2) bleaching (discoloration) in order to remove dyes giving dark colour of oils; this involves absorption of an unnecessary substances by bleaching earth, activated carbon or alumina;
3) deodorisation (deodorise) – a process designed to remove from the oil fat substances causing an unpleasant taste and odour; this requires the use of steam distillation at a temperature of 200 - 300°C, under a reduced pressure (Bartuzi K., 2012).

Can such a process be described as organic or eco-friendly? It is doubtful. Doubts exacerbate when a consumer examines another product with the prefix *eco*: ecological water softener, sold by the same manufacturer. The manufacturer motivates the use of water softener by "a modular system", which means that to achieve the desired effect, one needs a few products, for example, washing liquid and softener. The analysis of information on the latter product is presented in Table 2.

It can be observed that the manufacturer uses terms incomprehensible to an average consumer, like: does not contain NTA and EDTA, does not contain synthetic additives and complexing polycarboxylates. NTA – this is a *nitrilotriacetic acid*, while EDTA means *editic acid*, from Latin - *acidum edeticum*. In both cases, these are organic chemicals used in precipitation of the metal ions from a given substance, such as bismuth, chromium, zinc, zirconium, aluminum, cadmium, and cobalt (www. encyklopedia.pwn.pl). Other questions arise: Why would there be metals in rapeseed oil? And if they do not exist, then why one should use NTA and EDTA? Therefore, one has here not only incomprehensible abbreviations but also a suggestion that in other "non-organic" products such chemicals are located, whilst in this one - not.

Table 2

Suggested and real characteristics of the organic water softener

No.	Feature described by manufacturer	Evaluation of a feature in practice
1	Does not contain NTA and EDTA	Information irrelevant to a consumer
2	For colour and white fabrics	Irrelevant information, there are no other fabrics
3	Undergoes complete biodegradation	Biodegradation is conditional - must meet a number of conditions
4	Includes only zeolites, citrates and soda	Compounds that require chemical treatment: Zeolites - a group of minerals, hydrous silicates of sodium and calcium. Citrate - organic chemical compounds, salts and esters of citric acid. Soda (sodium carbonate) - a substance produced by various methods using a variety of chemical processes.
5.	It does not contain phosphates, does not contain fillers, synthetic additives and complexing polycarboxylates	Information difficult to verify, it is really hard to find more data on polycarboxylates for example

Source: author's construction

Other names used by the manufacturer, as phosphates, complexing additives or polycarboxylates, are described residually in available sources and potential consumer is not able to conclude whether a given substance is harmful or not, and whether its absence in this case is a unique (positive) feature of the product.

Equally misleading information is the one about zeolites, citrates, and soda because the manufacturing procedure of the last two substances involves a complex chemical processes, and the first (zeolites) minerals are extracted from earth which also must undergo a chemical treatment. Finally, it should be noted that these organic products are sold in plastic bottles, which the manufacturer does not mention at all.

Conclusions

People's behaviour as consumers of green products are associated not only with their knowledge and economic situation but also with a sense of personal danger of a negative change, a sense of responsibility and willingness to self-restraint. Many recent researches show that consumers are paying more and more attention to the environmental aspects of purchasing. Taking advantage of this trend, many manufacturers have decided to add some environmental slogans and symbols to information about their offer; but, of course, if given information is true, this is appropriate. It seems, however, that often terms *eco*, *natural*, *environmentally friendly* are abused, and actual relationships between a product and the environment can hardly be called *friendly*.

The essence of greenwashing, based on a case study of an organic washing liquid and ecological water softener was discussed in this paper. In both examples, one can talk about greenwashing because the producer provides information about the environmental characteristics that cannot be verified, uses terms and expressions unclear to consumers as well as gives irrelevant and obvious information, and finally gives false one.

It seems that such actions will, however, still have a place in the market, since an average consumer is not able to check all the technical and professional terms and information, and, thus, must trust a manufacturer or a seller. They, in turn, take into account their own benefits, not the consumers' welfare or the state of the environment, and hence in their interest it is to limit true messages and highlight misleading information. This is definitely unethical behaviour, having nothing in common with corporate social responsibility.

Bibliography

1. Banerjee, S., Gulas, C. S., & Iyer, E. (1995). Shades of Green: a Multidimensional Analysis of Environmental Advertising. *Journal of Advertising*, 24(2), pp. 21-31.
2. Delmas, M.A., Burbano, V.C. (2011). The Drivers of Greenwashing. *California Management Review*, 54(1), pp. 64-87.
3. Nyilasy, G., Gangadharbatla H., Paladino A. (2013). Perceived Greenwashing: The Interactive Effects of Green Advertising and Corporate Environmental Performance on Consumer Reactions. *Journal of Business Ethics* (published online Nov 2013 – DOI 10.1007/s10551-013-1944-3).
4. Parguel B., Benoit-Moreau F., Larceneux F. (2011). How Sustainability Ratings Might Deter 'Greenwashing': A Closer Look at Ethical Corporate Communication. *Journal of Business Ethics* 102(1), pp. 15-28.
5. Witek L. (2103). The Phenomenon of Greenwashing and Consumer Behaviour [Zjawisko greenwashingu a zachowania konsumentow] [in:] G. Rosa, A. Smalec. Marketing przyszłosci. Trendy. Strategie. Instrumenty, Zeszyty Naukowe Uniwersytetu Szczecinskiego nr 777, Szczecin, pp. 123-134.
6. Zatwardnicka-Matura B. (2013). Selected Aspects of Environmental Protection and Consumers` Attitudes [Wybrane aspekty ochrony srodowiska a postawy konsumentow] [in:] G. Rosa, A. Smalec. Marketing przyszłosci. Trendy. Strategie. Instrumenty, Zeszyty Naukowe Uniwersytetu Szczecinskiego nr 777, Szczecin, pp. 287-300.
7. Bartuzi K. (2012). Vegetable Oils, Characterization and Technology of Manufacturing [Oleje roslinne, c*h*arakterystyka i technologia wytwarzania], Retrieved: http://www.nutrilife.pl/index.php?art=52, 03.01.2014. Access: 02.01.2014.

8. Motavalli J., (2011). A History of Greenwashing: How Dirty Towels Impacted the Green Movement, Retrieved: http://www.dailyfinance.com/2011/02/12/the-history-of-greenwashing - how-dirty-towels-impacted-the-green/. Access: 02.01.2014.
9. Romero P., (2008). Beware of Green Marketing, Warns Greenpeace, abs-cbnNEWS.com/ Newsbreak, Retrieved: http://www.abs-cbnnews.com/special-report/09/16/08/beware-green-marketing-warns-greenpeace-exec. Access: 02.01.2014.Earth Day: The History of A Movement, Retrieved: http://www.earthday.org/earth-day-history-movement. Access: 02.01.2014.
10. Greenwashing – definition, Retrieved: http://www.springerreference.com /docs/html/ chapterdbid/ 349578.html. Access: 02.01.2014.
11. http://encyklopedia.pwn.pl/haslo.php?id=3938352. Access: 02.01.2014.
12. http://pl.wikipedia.org/wiki/Biodegradacja. Access: 02.01.2014.
13. http://www.ecoshop.com.pl/p89,sonett-ekologiczny-plyn-do-prania-lawendowy-2l-sonett.html. Access: 02.01.2014.
14. http://www.sonett.eu/. Access: 03.01.2014.
15. The Sins of Greenwashing, 2010 Report on Environmental Claims Made in The North American Consumer Market, Retrieved: http://sinsofgreenwashing.org/index35c6.pdf. Access: 02.01.2014.
16. Who Cares Wins – HAVAS Worldwide Report 2010, Retrieved: http://www.havas.com/insights/ books/actualites/who-cares-wins. Access: 02.01.2014.

FACTORS AFFECTING THE FORMATION OF REGIONAL CLUSTERS IN LATVIA

Zanete Garanti[1], Mg.oec. [+]; **Andra Zvirbule- Berzina**[2], Dr.oec.
[1] Lecturer, Faculty of Economics and Social Development, Latvia University of Agriculture
[2] Professor, Faculty of Economics and Social Development, Latvia University of Agriculture

Abstract. Regional business clusters are a tool for enterprises to raise their productivity, efficiency, innovation capacity, and competitiveness which ensures the overall growth and development of a region; thereby, they play a significant role in the region's economy**.** The aim of the research is to analyse the factors affecting the formation of regional clusters in Latvia. First, clusters emerge in the regions where overall economic activity is sufficiently high, so that enterprises have possibilities to interact. The second important factor is the availability of support institutions in the region to secure the availability of both funds and consultancy services, and a faster transfer of innovations and technologies. Third, an essential factor is the availability of population and qualified labour in the region. An important factor is also the attraction of industries to regions, as regional clusters emerge in the industries that develop fast in the region. An analysis of these factors suggests that the situation in Latvia's regions is diversified. A concentration of economically active population, which forms the necessary critical mass for cluster development, is explicitly observed in Riga region. Entrepreneurial activity is also higher in Riga region; yet, it tends to increase in all the regions, and entrepreneurship support institutions are also established in all the regions. An analysis of industries points to region-specific industries whose growth is stronger; thus, the potential for cluster development is higher in service sectors in Riga, Pieriga, Vidzeme and Kurzeme, and manufacturing in Zemgale and Latgale regions.

Key words: regional clusters, cluster development, regional development.
JEL codes: R11, J11, R12, O18

Introduction

Under the present globalisation, the location of an enterprise plays an important role, as it can provide competitive advantages to the enterprise. The economic literature, beginning with Alfred Marshall's (2009) research on industrial districts in the 1920s, analyses companies' gains from their close location to each other and their interaction. Nowadays, regional clusters regained their importance along with M.E.Porter's research (1990, 1998a, 1998b, 1998c, 2000, 2003). According to the authors (Garanti Z., 2013; Garanti Z., Zvirbule-Berzina A., 2013a), a regional cluster can be defined as a combination of five dimensions – single sector enterprises that cooperate and compete; supportive enterprises from a wide range of sectors; public and government institutions, interested in economic development of the sector and region; other institutions such as research, educational, financial, and other ones, and fifth is the regional dimension which combines all the four above-mentioned dimensions into one region. In their previous research, the authors have explored the benefits of regional cluster initiatives at the micro (enterprise) and macro (region) level (Garanti Z., Zvirbule-Berzina A., 2013b). The authors' research

[+] Corresponding author. Tel.: + 90 533 850 5809; fax: + 90 392 725 7 999
E-mail address: zhanette@gmail.com

indicates the substantial role of regional clusters in raising the efficiency and productivity of enterprises (Porter M.E., 2000; Krugman P., 1991; Dumais G., Ellison G., Glaser E.L., 2002; Scott A.J., 1988, 1994; Scott A.J., Angel D.P., 1987; Madsen E.S., Smith V., Dilling-Hansen M., 2003; Lin H.L., Li Yang C.H., 2011; Rizov M., Oskam A., Walsh P., 2012) and in creating and introducing innovations (Saxenian A., 1994; Porter M.E., 2000; Folta T.B., Cooper A.C., Baik Y.S, 2006; Ciu T.M., Wei X., 2012; Boschma R., Wal A.L.J.T., 2007; Giuliania E., Bell M., 2005; Chyi Y.L., To Y.M., Liu W.H., 2011). Higher efficiency, productivity, and innovation capacity provides competitive advantages to a company (Porter E.M., 1990, 1998a; Onsel S., et al., 2008; Ganne B., Leclere Y., 2009; Dayasindhu N., 2002) on the domestic and global markets. An entrepreneurial environment where the growth and viability of companies is higher emerges (Arthur W.B., 1990; Lin C.H., Tung C.M., Huang C.T., 2006; Ketels C.H.M., 2003; Avenel E., et al., 2005; Baptista R., Preto M.T., 2011; Wennberg K., Lindqvist G., 2010; Klumbies I., Bausch A., 2011; Mazzola F., Bruni S., 2000; Renski H.C., 2011) with companies agglomerating and interacting among each other. M. Delgado, E.M. Porter, and S. Stern (2010), while conducting their research in the USA in the period of 1990-2005, proved a hypothesis that clusters foster business growth in the region which can be measured by the emergence of new enterprises in industries in the region and employment in these industries. Clusters provide an environment for entrepreneurship development which contributes to the region's development (Porter M.E., 2003, 2004). Scientists R.J. Stimson, R.R. Stough, and B.H. Roberts (2006) assume that nowadays regional clusters are promoters of regional development and are used to build regional development policy (Pachura P., 2010). E.M. Porter, along with his colleagues M. Delgado and S. Stern (2011), came to conclusion that existence of a cluster in a particular sector leads to regional development that can be measured by indicators such as employment, new business creation, wages, and patenting capability. C.H.M. Ketels (2008) summarises and the authors conclude that regional clusters are an important driving force of regional development.

The important role of regional clusters in a regional economy has promoted the research on the factors influencing regional cluster development in Latvia. Therefore, the research hypothesis is that the formation of regional clusters is affected by several factors. The aim of the research is to analyse the factors affecting the formation of regional clusters in Latvia. The following research tasks are set up to reach the aim:

1) to analyse entrepreneurial activity and the availability of support in the regions;
2) to analyse the availability of human resources in the regions;
3) to identify the region-specific industries.

The research materials and methods include data of the Central Statistical Bureau (CSB), the database of innovation support institutions, and both national and foreign research papers. The authors employed the monographic method, analysis and synthesis, and time series analysis to process data on entrepreneurial activity in the regions. The authors used structural analysis to analyse the availability of support institutions and time series analysis to examine the availability of human resources, while shift-share analysis was employed to determine how industries are associated with the regions.

Research results and discussion

Factor 1: entrepreneurial activity in a region

In the development of regional clusters, both the present entrepreneurial activity and the historical business evolution are important. According to an extensive research on clusters in Hungary (Szanyi M.,

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

2012; Szanyi M., et al., 2010), the historical location of industries in the regions in the East and Central European countries presently significantly affects the pace of development of clusters. Regardless of a transitional period of more than 20 years and the accession to the EU, a lot of clusters are located in the historical places of industries and enterprises, thus, regional clusters continue developing their present regional advantages and stimulate regional growth. For instance, the industry of food and alcoholic and non-alcoholic beverages has historically developed in Riga, and such large enterprises as the JSC "Laima", the JSC "Aldaris", the JSC "Latvijas balzams", and many others successfully operate nowadays as well. Historically located in Zemgale, the industry of mechanical engineering and metalworking, after a long break, is now growing. The industry of fish processing is located in the municipalities of Liepaja and Ventspils where it is now developing as well. The industries that have historically developed in the regions have a high potential to form regional clusters, as these industries are deeply rooted in their regions. Yet, in order that regional clusters are able to emerge, the "critical mass" of economic activity has to be reached. The present entrepreneurial activity in the regions is characterised by changes in the number of enterprises per 1000 capita in Latvia's statistical regions.

Table 1

Changes in the number of enterprises per 1000 capita in the statistical regions in Latvia for the period of 2008- 2011

Region	Year			
	2008	**2009**	**2010**	**2011**
Riga	69	71	75	85
Increase from the base year, %	-	2.9	8.7	23.2
Pieriga	49	48	53	60
Increase from the base year, %	-	-2.0	8.2	22.4
Vidzeme	59	59	63	71
Increase from the base year, %	-	0.0	6.8	20.3
Kurzeme	53	54	57	64
Increase from the base year, %	-	1.9	7.5	20.8
Zemgale	47	45	50	57
Increase from the base year, %	-	-4.3	6.4	21.3
Latgale	48	48	51	59
Increase from the base year, %	-	0.0	6.3	22.9

Source: authors' calculations based on the CSB data, 2013

The highest entrepreneurial activity (Table 1) is observed in Riga region where the number of enterprises per 1000 capita is 36% higher than in the other regions on average. A positive trend in entrepreneurship is the fast and steady increase in the number of enterprises in all the regions – in 2011 their number rose by 22% on average in all the regions compared with 2008. Of the established enterprises in Latvia, on average, 77% were limited liability companies (Ltd), 8% - partnerships, 7% - individual merchants (IM), and 2% were farms in 2012. Riga region is characterised by the highest proportion of Ltd, i.e. 90% of all the registered enterprises, and the lowest proportion of farms, only 0.04%. In Latgale, the lowest proportion is observed for Ltd – 65%, while the highest proportion is registered for farms – 8%. The proportions of partnerships and IM in the total number of enterprises are similar across all the regions. In 2013, the equity capital of all enterprises registered in Latvia totalled LVL 13.4 billion, with the average equity capital per enterprise of LVL 66 thousand. The highest proportion of total equity capital of

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

enterprises is observed in Riga planning region - 88%, followed by Kurzeme with 5%, and Vidzeme, Zemgale, and Latgale with 2% each.

In Latvia, on average, 93% are micro-enterprises (with the number of employees less than nine persons), 6% are small enterprises (with the number of employees less than 49), 1.2% are medium ones (with the number of employees less than 249), and 0.2% are large enterprises (their number of employees is more than 250). Of the large enterprises, 66% are located in Riga region.

Factor 2: the availability of entrepreneurship support institutions

The availability of related and complementary institutions as well as educational, scientific and research institutions is a significant factor in the development of regional clusters, so that the business sector can successfully interact with them, thereby, creating new products and innovations. The world's experiences evidence that part of innovations emerges if clusters cooperate with higher education institutions; thus, it is important that entrepreneurs in their region have access to higher education institutions. According to data of the Ministry of Education and Science of the Republic of Latvia (Zinatne Latvija, 2010; Zinatnes un tehnologiju..., 2011), 32 higher education institutions operated in Latvia in 2013, of which 18% were state universities, 41% – state higher education institutions, and 41% were non-university type higher schools founded by legal entities, of which 78% were located in Riga; however, entrepreneurs in the regions had access to regional higher schools in Ventspils, Liepaja, Valmiera, Rezekne, Daugavpils, and Jelgava and their affiliates in municipalities. In addition, 83 scientific institutes function in Latvia.

Table 2

Entrepreneurship support institutions in the planning regions in Latvia in 2013

Support institutions	Planning region									
	Riga	Proportion, %	Vidzeme	Proportion, %	Kurzeme	Proportion, %	Zemgale	Proportion, %	Latgale	Proportion, %
Business and technological parks and centres	7	54	0	0	1	8	4	31	1	8
Competence centres	6	100	0	0	0	0	0	0	0	0
Business incubators	3	13	4	17	5	22	8	35	3	13
Associations and NGOs	11	26	10	23	7	16	9	21	6	14
Municipal development departments	9	32	0	0	14	50	0	0	5	18
Information centres	2	12	2	12	6	35	5	29	2	12
Innovation and technology transfer centres	5	56	0	0	1	11	2	22	1	11
Development agencies	6	60	1	10	0	0	2	20	1	10
Institutes	13	62	3	14	0	0	5	24	0	0

Source: authors' calculations based on the databases of innovation support institutions, 2013 and competence centres, 2013

Various institutions that focus on cooperation between the private and public sectors, creation of innovations, transfer of technologies, consultancy services, and other aspects important to the cluster

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

have been established in Latvia outside the higher education institutions and scientific institutes. The majority of these institutions of support for innovative activity operate in all the regions, thus, providing access to services not only in Riga but in all the regions. The entrepreneurship support institutions and their regional distribution are shown in Table 2.

Most of the support institutions operate in all the regions (Table 2) which ensures entrepreneurs access to important services close to their business site. For instance, business incubators are evenly located across all the regions, offering infrastructural and consultancy services (Biznesa inkubatori, 2013). In total, 36% of all the support institutions are located in Riga, 20% in Kurzeme and Zemgale, 12% in Vidzeme, and 11% in Latgale. Only the competence centres that were established to foster cooperation between innovation-oriented enterprises of a certain industry and scientific institutions in order to jointly work on industrial research projects and projects of development of new products and technologies, thereby, contributing to raising the competitiveness of enterprises (Kompetences centri, 2013), are located only in Riga. As competence centres focus on consolidating certain prospective enterprises of an industry, competence centres for the chemical and pharmaceutical industry, forestry, the environment, biotechnology and bioenergy, electronics, IT and mechanical engineering were established, and, according to the information provided by the Investment and Development Agency of Latvia, the objective of these institutions is to work towards a certain industry rather than the region.

Factor 3: the availability of human resources in a region

The concentration of population and labour is an important precondition for the development of regional clusters. The main socio-economic factors describing availability of human resources in the regions of Latvia are summarised in Table 3.

Table 3

The main socio-economic indicators in the planning regions of Latvia in 2012

Indicators	Regions					
	Riga	**Pieriga**	**Vidzeme**	**Kurzeme**	**Zemgale**	**Latgale**
Population (thousand)	648.9	369.6	209.0	265.9	250.8	298.3
Population density (people per m^2)	2139.7	36.3	13.7	19.6	23.3	20.5
Population under working age (%)	13.3	16.1	14.1	15.2	15	13.2
Population at working age (%)	64	63.6	63	62.5	63.8	63.5
Population over working age (%)	22.7	20.3	22.9	22.3	21.2	23.3
Proportion of the employed population in the total population (%)	60.3	58.1	52.2	55.6	55	49.6
Proportion of job-seekers in the total number of economically active population (%)	13.8	12.1	15.8	12.9	17.2	20.6

Source: authors' calculations based on the CSB data, 2013

Almost half of Latvia's population lives in the regions of Riga and Pieriga; thus, the concentration and density of population in the other regions are 95 times lower than in Riga which can hinder even development of regional clusters in all the regions of Latvia. In 2012, the population decreased in all the regions on average by 7% compared with 2008; however, the decrease in the number of residents in the

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

regions of Riga and Pieriga was smaller (6.9% and 0.9% respectively) than in Vidzeme (8.5%), Kurzeme (8.5%), Zemgale (7.5%), and Latgale (10.1%).

The proportion of working-age population is the highest in Riga region, whereas the lowest in Kurzeme region. In all the regions, especially in Latgale, the proportion of over working-age population is high. The age distribution of population in the regions points to the relative advantages of Riga region in developing regional clusters, as the greatest number of working-age population concentrates in this region.

In the regions of Riga and Pieriga, 60% of the population were employed, while in Latgale it was 50%. In the period of 2008-2012, the highest average rate of job-seekers was registered in Zemgale and Latgale, reaching 17%. The rate of job-seekers may be viewed as a potential for developing regional clusters; yet, municipal self-assessment data (Regionu attistiba Latvija, 2011) evidence that there is a lack of both qualified and low-skill employees in municipalities irrespective of the high rate of job-seekers. An especially large deficit of labour is observed in Kurzeme (30%) and Latgale (24%). There is a substantial lack of qualified employees in Vidzeme and Kurzeme, while there is a lack for low-skill employees in Kurzeme and Latgale.

In the regions where the average gross wages are higher, the proportion of employees with higher education is also higher. In Riga region, 45% of the employees have higher education (in the other regions, it is 27% on average), and the average gross wage is 33% higher than in the other regions, indicating a concentration of high-qualified labour in this region.

Factor 4: attraction of industries to a region

Regional clusters emerge in strong industries of a region. Regionally strong industries are those industries that have experienced the fastest growth over the period of analysis. To identify the industries, the growth of which is faster or slower than in the country or in a region on average, thus pointing to competitive industries in the region, economic research employs shift-share analysis (Aya-ay R.M., Prantilla E.B., 2007; Altena P., Heijman W., 2007; Heijman W., van der Heide C.M., 1998; Acs Z.J., Ndikumwami A., 1998; Zaccomer G.P., Mason G., 2011). The founders of this analysis are L.D.Ashby (1964) and V.R.Fuchs (1962). Based on the number of employees, a shift-share analysis divides employment growth in regions into 3 components:

- national share (NS) – it is the growth that is expected in a region if employment in the industry growths at the same rate as in the entire country;
- structural component/industry mix (IM) – it is the growth that is expected in the region, taking into account the differences in employment growth between the industry and the entire country;
- regional shift (RS) – it is the growth that is specific to the particular region and indicates the industries that are competitive in the particular region.

Using statistical data on the average number of occupied jobs in the regions by economic activity in 2005 and 2012, the NS is calculated according to Formula 1, the IS– according to Formula 2, and the RS– according to Formula 3, which were developed based on L.D. Ashby's methodology.

$$NS_{j;k} = NOD_{j;k;t} \times \left(\frac{NOD_{v;t}}{NOD_{v;t-1}} - 1\right) \qquad (1)$$

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

$$IS_{j;k} = NOD_{j;k;t} \times ((\frac{NOD_{v,k,t}}{NOD_{v;k,t-1}} - 1) - (\frac{NOD_{v;t}}{NOD_{v;t-1}} - 1) \quad (2)$$

$$RS_{j;k} = NOD_{j;k;t} \times ((\frac{NOD_{j,k,t}}{NOD_{j;k,t-1}} - 1) - (\frac{NOD_{v,k,t}}{NOD_{v;k,t-1}} - 1)) \quad (3)$$

where:

- NOD- number of employees;
- *v* – country;
- *j* – region;
- *k* – industry;
- *t* – reporting year (the year 2012);
- t-1 – base year (the year 2005).

The most important indicator is the regional shift RS within the context of regional economy. The industries in the regions that present the highest positive regional shift are shown in Table 4.

Table 4

Industries with the highest regional shift in the statistical regions of Latvia in the period of 2005- 2012

Riga region		**Pieriga region**	
Industry	**RS**	**Industry**	**RS**
Warehousing and support activities for transportation	7717	Postal and courier activities	4595
Computer programming, consultancy and related activities	4536	Warehousing and support activities for transportation	2264
Human health activities	3364	Wholesale trade, except of motor vehicles and motorcycles	2023
Vidzeme region		**Kurzeme region**	
Industry	**RS**	**Industry**	**RS**
Electricity, gas, steam and air conditioning supply	726	Legal and accounting activities	457
Forestry and logging	442	Manufacture of fabricated metal products, except machinery and equipment	442
Libraries, archives, museums and other cultural activities	386	Land transport and transport via pipelines	423
Zemgale region		**Latgale region**	
Industry	**RS**	**Industry**	**RS**
Manufacture of fabricated metal products, except machinery and equipment	615	Manufacture of fabricated metal products, except machinery and equipment	528
Social work activities with accommodation	595	Land transport and transport via pipelines	476
Real estate activities	445	Food service activities	426

Source: authors' calculations

On the whole, the number of occupied jobs in Latvia has decreased by more than 80 thousand or by 9% in the period of 2005-2012. Regionally, the greatest decrease was observed in Latgale region where the number of occupied jobs fell by 16%. Regardless of the decrease in the total number of jobs, industries in which the number of jobs rose particularly as a result of regional competitive advantages were identified in the regions; thus, the potential of emergence of clusters is high in these industries. In Riga region, warehousing and support activities for transportation show the highest RS. In the result of overall economic growth in the country (NS), the number of jobs in this industry in Riga region decreased

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

by 849. Owing to the growth of this particular industry (IS), the number of employees employed in the industry in Riga region rose by 771. However, owing to the regional shift (RS) in Riga region, the industry of warehousing and support activities for transportation employs by 7717 more individuals. In Pieriga region, postal and courier activities is the industry showing the highest regional shift, in Vidzeme region it is electricity, gas, steam and air conditioning supply, in Kurzeme – legal and accounting services, and in the regions of Zemgale and Latgale - manufacture of fabricated metal products, except machinery and equipment.

Conclusions, proposals, recommendations

1. The analysis of business indicators outlines the potential of regional clusters in all the regions. The economic activity in the regions, which is one of the most important preconditions for the development of regional clusters and which can be measured as the number of enterprises per 1000 capita, rose in all the regions at an average rate of 22% from the base year.
2. The entrepreneurship support institutions – technological parks, innovation and technology transfer centres, business incubators etc. – are located in all the regions; thereby, ensuring access to consultancy and other services which is important for the development of clusters and economic growth in the regions.
3. The analysis of socio-economic indicators shows significant socio-economic differences among the regions. Riga region is characterised by an explicit concentration of population, including the working-age and economically active population. Besides, a higher proportion of employees with higher education is observed in this region, which results in higher gross wages. Yet, a positive trend is the annual increase in gross wages in the regions at 4% on average from 2011.
4. The analysis of industries in the regions of Riga, Pieriga, and Kurzeme indicates the dominance of the services sector in the regions; in Vidzeme region - electricity, gas, and thermal energy supply is an industry with the highest growth, while the manufacture of fabricated metal products is a fast growing industry in the regions of Zemgale and Latgale.

Bibliography

1. Acs, Z.J., Ndikumwami, A. (1998). High-Technology Employment Growth in Major US Metropolitan Areas. *Small Business Economics,* Vol. 10, No. 1, pp. 47-59.
2. Altena, P., Heijman, W. (2007). In Search of Clusters. *Applied Studies in Agribusiness and Commerce.* Retrieved: http://www.apstract.net/node/82. Access: 16.12.2013
3. Arthur, W.B. (1990). Competing Technologies, Increasing Returns, and Lock-In by Historical Events. *The Economic Journal, Vol.* 99, Issue 394, pp. 116-131.
4. Ashby, L.D. (1964). The Geographical Redistribution of Employment: an Examination of the Elements of Change. *Survey of Current Business,* October, pp. 13-21.
5. Avenel, E., Corolleur, F., Gauthier, C., Rieu, C. (2005). Start-ups, Firm Growth and the Consolidation of the French Biotech Industry. *Laboratoire d'Economie Appliquée de Grenoble,* Working Paper GAEL 2005-03. p. 50.
6. Aya-ay, R.M., Prantilla, E.B. (2007). A Shift-Share Analysis on Regional Employment Growth in the Philippines. *National Convention on Statistics.* Retrieved: http://www.nscb.gov.ph/ncs/10thNCS/papers/invited%20papers/ips-22/ips22-04.pdf. Access: 24.11.2013.
7. Baptista, R., Preto, M.T. (2011). New Firm Formation and Employment Growth: Regional and Business Dynamics. *Small Business Economics,* Vol. 36, Issue 4, pp. 419-442.
8. Biznesa inkubatori (Business Incubators) (2013). Retrieved: http://www.liaa.gov.lv/lv/es-fondi/isteno/biznesa-inkubatori. Access: 07.12.2013.

9. Boschma, R., Wal, A.L.J.T. (2007). Knowledge Networks and Innovative Performance in an Industrial District: The Case of a Footwear District in the South of Italy. *Industry & Innovation*, *Vol.* 14, Issue 2, pp. 177-199.

10. Chyi, Y.L., Lai, Y.M., Liu, W.H. (2011). Knowledge Spillovers and Firm Performance in the High-technology Industrial Cluster. *Research Policy,* Vol. 41, Issue 3, pp. 556-564.

11. Ciu, M., Wei, X. (2012). Analysis for Innovation Performance of the Enterprise in Industrial Cluster Based on the Network. *Advances in Computer Science and Engineering,* pp. 443-450.

12. CSB data (2013). Retrieved: www.csb.gov.lv. Access: 18.12.2013.

13. Dayasindhu, N. (2002). Embeddedness, Knowledge Transfer, Industry Clusters and Global Competitiveness: a Case Study of the Indian Software Industry. *Technovation*, Vol. 22, Issue 9, pp. 551-560.

14. Delgado, M., Porter, E.M., Stern, S. (2010). Clusters and Entrepreneurship. *Journal of Economic Geography,* Vol. 10, Issue 4, pp. 495-518.

15. Delgado, M., Porter, E.M., Stern, S. (2011). Clusters, Convergence and Economic Performance. *US Census Bureau Center for Economic Studies Papers,* No. CES-WP- 10-34, p. 46.

16. Dumais, G., Ellison, G., Glaeser, E.L. (2002). Geographic Concentration as a Dynamic Process. *The Review of Economics and Statistics*, Vol. 84, Issue 2, pp. 193-204.

17. Folta, T.B., Cooper, A.C., Baik, Y.S. (2006). Geographic Cluster Size and Firm Performance. *Journal of Business Venturing,* Vol. 21, Issue 2, pp. 217-242.

18. Fuchs, V.R. (1962). Statistical Explanations of the Relative Shift of Manufacturing Among Regions of the United States. *Papers of the Regional Science Association,* Vol. 8, Issue 1, pp. 105-126.

19. Ganne, B., Lecler, Y. (2009). *Asian Industrial Clusters, Global Competitiveness and New Policy Initiatives.* World Scientific Publishing Co. Pte. Limited, p. 146.

20. Garanti, Z. (2013). Theoretical Aspects of Regional Clusters. *Middle-East Journal of Scientific Research*, No. 13, pp. 23-30.

21. Garanti, Z., Zvirbule- Berzina, A. (2013a). Towards Multi-dimensional Regional Cluster Identification. In: *Economic Science for Rural Development*: Proceedings of the International Scientific Conference, No. 31, pp. 225-233.

22. Garanti, Z., Zvirbule- Berzina, A. (2013b). Regional Cluster Initiatives as a Driving Force for Regional Development. *European Integration Studies,* No 7, pp. 91-101.

23. Giuliania, E., Bell, M. (2005). The Micro-determinants of Meso-level Learning and Innovation: Evidence from a Chilean Wine Cluster. *Research Policy*, Vol. 34, Issue 1, pp. 47-68.

24. Heijman, W., van der Heide, C.M. (1998). Regional Economic Growth and Accessibility: The Case of the Netherlands. *Congress of the European Regional Science Association Proceedings*, No 1, pp. 436-462.

25. Inovacijas atbalsta strukturu datu bazes prezentacija (Innovation Support Structure Database Presentation) (2013). Retrieved: http://www.vatp.lv/sites/default/files/inovacijas_atbalsta_strukturu_datu_bazes_2_ints_viksna.pdf. Access: 12.12.2013.

26. Ketels, C.H.M. (2003). Cluster-Based Economic Development. Retrieved: www.caps.am/data.php/859.pdf. Access: 12.02.2013.

27. Klumbies, I., Bausch, A. (2011). A Narrative Review on the Influence of Cluster Location on Firm Performance. *International Journal of Business Research*, Vol. 11, Issue 6, pp. 83-100.

28. Kompetences centri (Competency Centres) (2013). Retrieved: http://www.liaa.gov.lv/lv/es-fondi/isteno/kompetences-centri. Access: 20.12.2013.

29. Krugman, P. (1991). Increasing Returns and Economic Geography. *The Journal of Political Economy,* Vol. 99, Issue 3, pp. 483-499.

30. Lin, C.H., Tung, C.M., Huang, C.T. (2006). Elucidating the Industrial Cluster Effect from a System Dynamics Perspective. *Technovation*, Vol. 26, Issue 4, pp. 473-482.

31. Lin, H.L., Li, H.L., Yang, C.H. (2011). Agglomeration and Productivity: Firm-level Evidence from China's Textile Industry. *China Economic Review*, 22 (3), pp. 313-329.

32. Madsen, E.S., Smith, V., Dilling- Hansen, M. (2003). Industrial Clusters, Firm Location and Productivity. Some Empirical Evidence for Danish Firms. Retrieved: http://www.hha.dk/nat/wper/03-26_esmvs.pdf. Access: 16.09.2012.

33. Marshall, A. (2009). *Principles of Economics*. Unabridged Eight Edition. Cosimo Inc. p. 896.

34. Mazzola, F., Bruni, S. (2000). The Role of Linkages in Firm Performance: Evidence from Southern Italy. *Journal of Economic Behaviour & Organization*, Vol. 43, Issue 2, pp. 199-221.

35. Onsel, S., Ulengin, F., Ulusoy, G., Aktas, E., Kabak, O., Topcu, I. (2008). A New Perspective on the Competitiveness of Nations. *Socio-Economic Planning Sciences*, Volume 42, Issue 4, pp. 221-246.

36. Pachura, P. (2010). *Regional Cohesion: Effectiveness of Network Structures*. Springer- Verlag Berlin Heidelberg, p. 121.

37. Porter, E. M. (1990). *The Competitive Advantage of Nations*. New York: Free Press, p. 896.

38. Porter, E. M. (1998a). *On Competition.* Boston: Harvard Business School Press, p. 544.

39. Porter, E. M. (1998b). Location, Clusters and the 'New' Microeconomics of Competition. *Business Economics*, Vol. 33-1, pp. 7-17.

40. Porter, E. M. (1998c). Clusters and the New Economics of Competition. *Harvard Business Review*, November-December, pp. 77-90.

41. Porter, E. M. (2000). Location, Competition and Economic Development: Local Clusters in the Global Economy. *Economic Development Quarterly*, Vol.14-1, pp. 15-31.

42. Porter, E.M. (2001). Clusters and Competitiveness. *Findings from the Cluster Mapping Project. Corporate Strategies for the Digital Economy.* Cambridge: Sloan Industry Centre, p. 23.

43. Porter, E. M. (2003). The Economic Performance of Regions*. Regional Studies,* Vol. 37.6&7, pp. 549- 578.

44. Porter, E.M. (2004). Competitiveness in Rural US Regions: Learning and Research Agenda. Retrieved: http://www.isc.hbs.edu/pdf/EDA_Rural_Regions_2004.06.29.pdf. Access: 16.09.2012.

45. Regionu attistiba Latvija 2010 (Regional Development in Latvia in 2010) (2011). Riga: Vides aizsardzibas un regionalas attistibas ministrija un Valsts regionalas attistibas agentura, p. 176.

46. Renski, H.C. (2011). External Economies of Localization, Urbanization and Industrial Diversity and New Firm Survival. *Papers in Regional Science*, Vol. 90, Issue 3, pp. 473-502.

47. Rizov, M., Oskam, A., Walsh, P. (2012). Is There a Limit to Agglomeration? Evidence from Productivity of Dutch Firms. *Regional Science and Urban Economics*, Vol. 42, Issue 4, pp. 595-606.

48. Saxenian, A. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128.* Cambridge: Harvard University Press, p. 240.

49. Scott, A.J. (1988). Flexible Production Systems and Regional Development: the Rise of New Industrial Spaces in North America and Western Europe. *International Journal of Urban and Regional Research,* Vol. 12, Issue 2, pp. 171–186.

50. Scott, A.J. (1994). *High-Technology Industry and Regional Development in Southern California*. Berkeley: University of California Press, p. 322.

51. Scott, A.J., Angel, D.P. (1987). The US Semiconductor Industry: a Locational Analysis. *Environment and Planning A*, 19 (7), pp. 875-912.

52. Stimson, R.J., Stough, R.R., Roberts, B.H. (2006). *Regional Economic Development: Analysis and Planning Strategy*. New York: Springer Berlin Heidelberg, p. 452.

53. Szanyi, M. (2012). Industrial Clusters: Concepts and Empirical Evidence from East-Central Europe. In: Welfens, P.J.J. *Clusters in Automotive and Information & Communication Technology.* Springer-Verlag Berlin Heidelberg, pp. 87- 112.

54. Szanyi, M., Csizmadia, M., Illessy, M., Iwasaki, I., Mako, C. (2010). The Relationship Between Supplier Networks and Industrial Clusters: and Analysis Based on Cluster Mapping Method. *Eastern Journal of European Studies,* Vol. 1, Issue 1, pp. 87- 112.

55. Wennberg, K., Lindqvist, G. (2010). The Effect of Clusters on the Survival and Performance of New Firms. *Small Business Economics*, Vol. 34, Issue 2, pp. 221-241.

56. Zaccomer, G.P., Mason, P. (2011). A New Spatial Shift-share Decomposition for the Regional Growth Analysis: a Local Study of the Employment Based on Italian Business Statistical Register. *Statistical Methods & Applications*, Vol. 20, Issue 3, pp. 329-356.

57. Zinatne Latvija (Science in Latvia) (2010). Riga: Izglitibas un zinatnes ministrija, p. 100.

58. Zinatnes un tehnologiju attistiba Latvija (Science and Technology Development in Latvia) (2011). Riga: Izglitibas un zinatnes ministrija, p. 146.

LABOUR SUPPLY IN THE REGIONS OF LATVIA

Anda Zvaigzne[2], Dr.oec.; **Inese Saulaja**[3], Mg.oec.; **Dzesija Zeiferte**[4], Mg.oec.
[1,2,3] Faculty of Economics and Social Development, Latvia University of Agriculture
[1] Scientific Institute of Regionalistics, Rezekne Higher Education Institution, leading researcher in economics

Abstract. The present research provides a detailed analysis of the situation and problems in labour supply in Latvia's regions. The research aim is to examine the situation and problems in labour supply in Latvia's regions and to identify the alternatives for improving the situation. The labour supply in Latvia's regions is determined by changes in the demographic situation, the economic activity of the population, the number of job seekers as well as the qualifications and skills of labour. The key labour supply problems are the demographic situation in the country (population age structure), the low education level (qualifications and skills) etc. According to a hierarchy analysis, presently the most effective scenario for improving the labour supply (based on an expert evaluation) is the development of an individual government policy document for each region of Latvia.

Key words: employment, labour supply, problems.

JEL code: J00

Introduction

Latvia's labour market has been researched from various aspects, and studies have also been conducted on the opportunities for increasing employment in the country. In 2007 in Latvia, a complex project "Labour Market Studies" implemented by a group of researchers dealt with a wide range of urgent problems specific to Latvia's labour market. This project was implemented with the support of the European Union Structural Funds.

Researchers such as Hazans M. (2010, 2011), Philips K. (2010), Purmalis K. (2011), Rasnaca L. (2011), Baranceva B. (2007) as well as others have focused on researching the labour market. For many years, Professor Hazans M. has collected and processed the data on the emigration of population from Latvia to abroad as well as the causes and consequences of the emigration to the economy which significantly affects the labour market in Latvia.

As the labour market situation changes, many earlier scientific studies are losing their urgency due to the labour market's supply and demand shift. Therefore, the labour market needs to be continuously researched to examine the situation in it and its development trends in future.

The labour market in Latvia's regions is affected by the availability of labour. The lack of labour is one of the threats to Latvia's economy which significantly affects the development of the country's regional economies. In general, Latvia's macroeconomic indicators are improving. Nevertheless, a stressful situation remains in the labour market caused by structural unemployment and the wage level influenced

* Corresponding author. Tel.: +371 63025170; fax: + 371 63084987
E-mail address: Anda.Zvaigzne@llu.lv

by the open European labour market. One of the negative trends is the small labour market contributing to structural unemployment, as professionals often become unemployed or emigrate. The negative effect of this trend shows that the majority of professionals do not return to the labour market after becoming economically inactive, as they do not develop new skills that needed in their profession, thus, losing an opportunity to integrate into the labour market (Final Report…, 2013).

The availability of labour in Latvia is affected both by the supply of and the demand for labour and by other important factors. The demand for labour is comprised of employers' decisions to employ economically active residents in particular occupations in a certain period and place for adequate wages. Labour supply is made up of employees' decisions to have a certain job in a certain period and place (A Detailed Study…, 2007).

The research object is the labour market situation in Latvia's regions. The labour supply is determined by changes in the demographic situation, the economic activity of the population, the number of job seekers as well as the qualifications and skills of labour.

The research aim is to examine the situation and problems in labour supply in Latvia's regions and to identify the alternatives for improving the situation.

To achieve the aim, the following research tasks were set:

1) to examine the labour supply situation in Latvia's regions;
2) to identify the alternatives for improving the labour supply situation in Latvia's regions.

Research methods: the monographic and descriptive methods, analysis and synthesis, the graphic method, statistical analysis, expert evaluation, and the analytic hierarchy process.

Research results and discussion

1. Labour supply situation in Latvia's regions

One of the key indicators of labour supply is the demographic situation. The researcher of Latvia's labour market, Baranceva B. (Baranceva B., 2007), reveals in her research that Latvia's population tends to decline as many residents leave the country. She writes that wages are the main but not the only cause why residents leave. A number of factors affect this process: complications in private and professional life, lack of opportunities, life quality etc.

In the 2013 report of the Organisation for Economic Cooperation and Development (OECD), the labour market researcher Hazans M. (Hazans M., 2013) dedicated a whole chapter to these problems and clearly showed the extent of and trends in economic emigration that considerably influenced the labour market situation in Latvia.

According to the CSB information, the proportion of working-age population has started decreasing since 2009, whereas, the proportion of those over working age has started increasing.

Hazans M. believes that most individuals have moved abroad from Riga; whereas, expressed as a percentage of the total number of residents, the population of the regions of Latvia have been the ones who have emigrated in most of cases. The large decrease in the population of Latgale, according to Hazans, might be explained by a negative natural population growth. The destinations of Latvia's emigrants were the European Union countries. Of the emigrants, 6% moved to Russia, while immigrants from Russia accounted for 23% of total immigrants in 2012. He admits that the worst problem is that

young people continue leaving Latvia – more than half of all the emigrants were aged 25-49, and among men the proportion of young individuals was even higher.

Table 1

Percentage distribution of the population by age group in Latvia's regions in the period of 2009-2012

Region	2009			2010			2011			2012		
	Under working age	Working age	Over working age	Under working age	Working age	Over working age	Under working age	Working age	Over working age	Under working age	Working age	Over working age
Riga	12.5	66.4	21.1	12.7	65.9	21.4	12.9	65.4	21.7	13.2	64.1	22.7
Pieriga	15.1	66.6	18.3	15.2	66.4	18.4	15.3	66.2	18.5	16.1	63.8	20.1
Kurzeme	14.9	65.3	19.8	14.8	65.3	19.9	14.6	65.2	20.2	15.1	62.5	22.4
Vidzeme	14.0	65.5	20.5	13.7	65.7	20.6	13.5	65.7	20.8	14.1	63	22.9
Latgale	12.9	66.4	20.7	12.9	66.4	20.7	12.7	66.3	21	13.3	63.4	23.3
Zemgale	14.5	66.5	19.0	14.4	66.5	19.1	14.3	66.4	19.3	14.9	64	21.1
On average in Latvia	**13.9**	**66.1**	**19.9**	**13.9**	**66.0**	**20.0**	**13.8**	**65.9**	**20.2**	**14.5**	**63.5**	**22.1**

Source: authors' construction based on the CSB data, 2009-2012

As shown in Table 1, the proportion of the working-age population started decreasing in 2009, while the proportion of those over working age increased.

The analysis of the population under working age reveals that in 2012, the highest proportion of people of this age group was observed in Pieriga region (16.1%), while in Latgale region it was the lowest (13.3%).

Table 2 presents the proportion of economically active individuals aged 15-74 in the period of 2009-2012. The data show that the changes in the proportions were insignificant.

The proportion of job seekers aged 15-74 decreased almost in all the regions of Latvia, except Latgale The analysis of the changes in the number of job seekers in the period of 2009-2012 leads to the conclusion that in Latvia, the total number of job seekers with higher education decreased in 2012 compared with 2009. Nevertheless, the analysis of this indicator in Latvia's regions reveals that the number of job seekers with higher education in Riga and Pieriga decreased in 2012 compared with 2009 by 26% and 9%, respectively, whereas in the other regions of Latvia it rose.

of economically active individuals with secondary vocational or professional, general and primary education decreased in all the regions of Latvia.

In 2012, the greatest number of economically active individuals with higher education was reported in the regions of Riga (143.8 thousand) and Pieriga (61.9 thousand), whereas it was relatively the smallest one in Zemgale region – 29.6 thousand economically active individuals.

As regards the economically active population with secondary vocational or professional education, in 2012, the greatest number was registered in Riga region (103.9 thousand) and Latgale region

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

(63 thousand), while the smallest number was reported in Vidzeme region with 41.2 thousand economically active individuals.

Table 2

Proportion of the economically active population and job seekers in Latvia's regions in the period of 2009-2012 (aged 15-74)

Indicator	Region	2009	2010	2011	2012
Proportion of economically active people in the total population of the corresponding age group, %	Latvia	65.8	64.6	64.5	66.1
	Riga	69.9	69.0	68.6	69.8
	Pieriga	65.6	64.8	64.7	66.0
	Vidzeme	63.0	60.1	60.6	61.9
	Kurzeme	63.5	62.7	61.7	63.8
	Zemgale	65.7	63.6	64.5	66.3
	Latgale	61.1	60.5	60.2	62.6
Proportion of job seekers in the total economically active population of the corresponding age group,%	Latvia	17.5	19.5	16.2	15.0
	Riga	18.5	21.9	16.7	13.9
	Pieriga	14.9	17.7	14.4	12.1
	Vidzeme	18.8	15.4	12.7	15.8
	Kurzeme	15.0	15.9	15.1	13.0
	Zemgale	19.7	22.5	18.5	17.3
	Latgale	17.7	19.2	18.7	20.7

Source: authors' construction based on the CSB data, 2009-2012

The number of job seekers with secondary vocational or professional education decreased in 2012 compared with 2009 in all the regions of Latvia: by 24% in Riga; 12% in Pieriga; 6% in Vidzeme; 25% in Kurzeme; 10% in Zemgale; and 4% in Latgale (Economically Active Individuals, 2013).

Alternatives for improving the labour supply will be examined further in the research.

2. Assessment of the alternatives for improving the labour supply

The analysis of the statistical information leads to the conclusion that the labour supply deteriorated in Latvia during the economic crisis in the period of 2009-2012. The present research identified several problems in the field of labour supply. The authors employed the analytic hierarchy process to find the ways for tackling these problems (Saaty T.L., 2001).

A four-level hierarchy was constructed:

Level 1 – the general problem – for improving the labour supply in Latvia's regions – was defined.

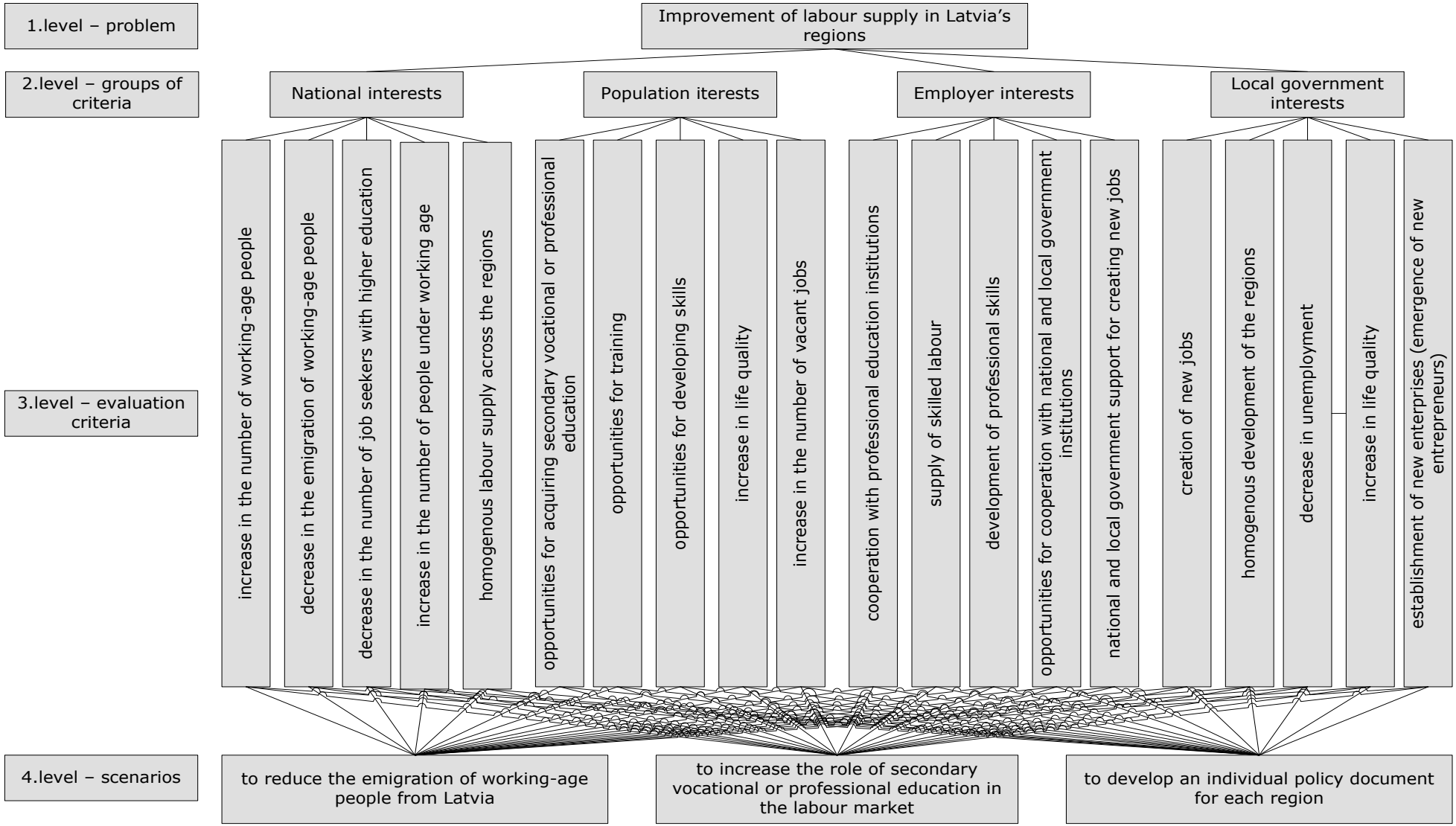
Level 2 – groups of criteria. Accordingly, the authors defined the groups whose criteria might be of interest. At this level, the authors classified interests into four groups: national, population, employer, and local government interests.

Level 3 – evaluation criteria. At this level, the authors defined the evaluation criteria for each group of interests.

Level 4 – alternatives were developed. The present research proposed three scenarios or alternatives for improving the labour supply in Latvia's regions.

The hierarchy of evaluation criteria is presented in Figure 1.

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014



Source: authors' construction based on the survey of experts and an analytic hierarchy process

Fig. 1. **Hierarchy of evaluation criteria for improving the labour supply in Latvia**

Five experts who were associated with the corresponding industry and represented all the groups of interests evaluated the scenarios or alternatives.

A summary of the experts' opinions is presented in Table 3.

Table 3

Calculations of the global priority vector

Scenarios	*National interests*	*Population interests*	*Employer interests*	*Local government interests*	*Global priorities*
	0.57	***0.14***	***0.16***	***0.14***	
to reduce the emigration of working-age people from Latvia	0.12	0.12	0.24	0.09	***0.14***
to increase the role of secondary vocational or professional education in the labour market	0.32	0.24	0.06	0.17	***0.25***
to develop an individual policy document for each region	0.56	0.64	0.70	0.74	***0.62***
to reduce the emigration of working-age people from Latvia	0.12	0.12	0.24	0.09	***0.14***

Source: authors' construction based on the survey of experts and an analytic hierarchy process

As Table 3 shows, presently the most effective scenario would be the *development of an individual policy document for each region of Latvia*. According to the experts, the distribution of labour resources and jobs significantly differed across the regions; thus, the global priority vector for this scenario was the highest - 0.62, whereas, the scenario for reducing the *emigration of working-age people from Latvia* had the lowest vector - 0.14. The alternative to *increase the role of secondary vocational or professional education in the labour market* had a global priority vector of 0.25. The dispersion around the average value of global priority vectors has to be taken into consideration as well. The greatest dispersion around the average was observed for the alternative to *increase the role of secondary vocational or professional education in the labour market* - 0.06-0.32 (or 3%). The dispersion for the two other alternatives was similar, approximately 2%.

Many experts explained such a result by the fact that reducing the emigration of working-age people was a short-term plan. They would rather emphasise that all other problems would be solved in a long-term if the professional education system was well-structured in the country and if a favourable environment for entrepreneurship was created in the regions.

Conclusions, proposals, recommendations

1. The labour supply in Latvia's regions is determined by changes in the demographic situation, the economic activity of the population, the number of job seekers as well as the qualifications and skills of labour.

2. The proportion of the working-age population decreased in the regions of Latvia, whereas, the proportion of those over working age increased. The proportion of working-age population has started decreasing since 2009, whereas, the proportion of those over working age has started increasing. The analysis of the population under working age reveals that in 2012, the highest proportion of people of this age group was observed in Pieriga region (16.1%), while in Latgale region, it was the lowest one (13.3%). In Latvia's regions, the number of economically active people with higher education rose, whereas, the number of those with secondary vocational or professional education etc. decreased. In 2012, the greatest number of economically active individuals with higher education was reported in the regions of Riga (143.8 thousand) and Pieriga (61.9 thousand), whereas, it was relatively the smallest one in Zemgale region – 29.6 thousand economically active individuals.
3. According to a hierarchy analysis, presently the most effective scenario for improving the labour supply (based on an expert evaluation) is the development of an individual government policy document for each region of Latvia.
4. According to the experts, in a long-term, the Ministry of Education and Science of the Republic of Latvia has to better structure the professional education system. The education institutions of various levels have to ensure that the labour supply adjusts to the demand for labour, which involves professional training, requalification and improvement of professional skills.
5. The Ministry of Education and Science of the Republic of Latvia has to cooperate with education institutions, entrepreneurs have to forecast the interaction between the demand for and the supply of labour, so that the necessary changes in the supply of education can be timely made and the labour market indicators are satisfactory and balanced; it is necessary to provide career consultations, training programmes to engage adults in lifelong learning etc.

Bibliography

1. *A Detailed Study of Labour and Labour Market in Economic Sectors* (in Latvian). (2007). Retrieved:http://www.lm.gov.lv/upload/darba_tirgus/darba_tirgus/petijumi/darba speka_darba_tirgus.pdf. Access: 07.01.2013.
2. Baranceva, B. (2007). The Problem of Outflow of Latvia's Active Labour, its Causes and Possible Solutions (in Latvian), in Research and Technology – Step Into the Future 2007, Vol. 2, No 2, pp. 23-26. Retrieved: http://www.tsi.lv/ResTech/2007/v2-2/4.pdf Access: 07.01.2013.
3. *Economic Activities and the Proportion of Job Seekers (aged 15-74), %, in Latvia's Regions in the Period of 2008-2012*. Retrieved: http://data.csb.gov.lv/Selection.aspx?px_tableid=Sociala\Ikgad%C4%93jie+statistikas+dati\Nodarbin%C4%81t%C4%ABba\NB0040.px&px_language=lv&px_type=PX&px_db=Sociala&rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0. Access: 07.01.2013.
4. *Economically Active Individuals by Education Level*. (2013). Retrieved: http://data.csb.gov.lv/Selection.aspx?px_tableid=Sociala\Ikgad%C4%93jie+statistikas+dati\Nodarbin%C4%81t%C4%ABba\NB0351.px&px_language=lv&px_type=PX&px_db=Sociala&rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0. Access: 07.01.2013.
5. Final Report on the Project "*Development of a Medium- and Long-term Forecasting System for Labour Market Demand",* activity *"Surveys in the Labour Market"* (in Latvian). (2012). Retrieved: http://www.em.gov.lv/images/modules/items /Gala_zinojums_EM_2012_63_ESF.pdf. Access: 07.01.2013.
6. Hazans, M. (2011). *Labour Market Integration of Ethnic Minorities in Latvia*, in Martin Kahanec and Klaus F. Zimmermann (eds), Ethnic Minorities in European Labour Markets: Challenges and Solutions, Cheltenham, UK – Northampton, MA, USA: Edward Elgar, pp. 163-197. [Web of Science, Library of Congress, British Library].
7. Hazans, M. (2013). The Number of Emigrants is Still Very Large (in Latvian). Latvia, LSM. Retrieved: http://www.lsm.lv/lv/raksts/latvija/zinas/hazans-aizbrauceju-skaits-aizvien-ir-ljoti-liels.a61402/. Access: 07.01.2013.

8. Hazans, M. (2013). *Emigration from Latvia: Recent Trends and Economic Impact,* in OECD (2013), Coping with Emigration in Baltic and East European Countries, OECD Publishing, pp. 65-110. doi: 10.1787/9789264204928-en.
9. Hazans, M., Philips, K. (2010). *The Post-Enlargement Migration Experience in the Baltic Labor Markets*, in Martin Kahanec and Klaus F. Zimmermann (eds), EU Labour Markets After Post-Enlargement Migration, Berlin - Heidelberg, Germany: Springer, pp. 255-304. [Web of Science, Library of Congress].
10. *Percentage Distribution of the Population by Age Group in Latvia's Regions in the Period of 2009-2012.* Retrieved: http://data.csb.gov.lv/Selection.aspx?px_tableid=Sociala\Ikgad%C4%93jie+statistikas+dati\Iedz%C4%ABvot%C4%81ji\Iedz%C4%ABvot%C4%81ji+skaits+un+t%C4%81+izmai%C5%86as\IS0180.px&px_language=lv&px_type=PX&px_db=Sociala&rxid=19100e33-6a5b-429f-af64-13a44f275c18. Access: 07.01.2013.
11. Purmalis, K. (2011). Analysis of the Labour Market of Latvia and its Development Possibilities. A Summary of the Doctoral Thesis. Riga: LU EVF. Retrieved: http://www.lu.lv/fileadmin/user_upload/lu_portal/eng/news/Promocijas_darbs_Karlis_Purmalis.pdf. Access: 07.01.2013.
12. Rasnaca, L. (2011). Labour Market Relations in Towns and Rural Areas in Latvia (in Latvian). Doctoral thesis. Riga: LU SZF. Retrieved: http://szf.lu.lv/files/petnieciba/ promocijas_darbi/LigaRasnaca15042011PDF.pdf. Access: 07.01.2013.
13. Saaty, T.L. (1996). *Decision Making with Dependence and Feedback: The Analytic Network Process (Second ed.)*. Pittsburgh, USA: RWS Publications, p. 356.

ORGANIC AGRICULTURE FOR SUSTAINABLE RURAL DEVELOPMENT: LITHUANIAN CASE

Jadvyga Ciburiene[+], PhD, professor
Kaunas University of Technology, Lithuania

Abstract. In Lithuania and all over the world, the production of organic agriculture and organic food products is one of the most dynamically developing aspects of environment and healthy way of life. The production of organic food meets the concept of sustainable development within the country at regional and national levels. The export of organic food realises the sustainable development of the idea of open economy to ensure the sustainable development of the entire world on the global level.

The aim of the study is to analyse the motives of organic food production and export.

The tasks of the study are to characterise the production of organic food as a sustainable development path; to discuss the production of organic food and its exports; and to characterise the motives of organic food production.

The analysis showed that organic agriculture was successfully evolving in the developed European Union (EU) countries, especially in Denmark, Germany, and Italy; and there is a way for further agriculture sustainable development in Lithuania.

Key words: sustainable development, agricultural policy, organic farm, organic agriculture, organic food products, agriculture, and international trade.

JEL code: Q01, Q17, Q18.

Introduction

In terms of contemporary globalisation and economic integration, each country, including Lithuania, seeks to increase its economic competitiveness. One of the most important trends is the demand on the domestic and foreign markets for agricultural products produced within safe farming practices that protect consumers' health and the environment. In this case, the most promising farming system is organic farming which provides a crucial element of quality – organic food products. At the global level, the development of organic agriculture is common both relating with theoretical and practical studies of various issues and the development of this practice. Self-sufficiency in food products is one of the most important socio-economic problems of the global economy which has been studied by Lithuanian and foreign scientists. Currently, Lithuanian researchers put more and more emphasis on the issues related with organic agriculture, increasing production and preserving the natural environment and its resources. The importance of the development of organic agriculture has been noted in the programme of the European Commission "Horizon 2020" (2011) focussing on the following challenges: food security, sustainable agriculture, health, demographic change, and well-being.

The research trends give evidence of the significance of organic farming, export, and organic food production in increasing the competitiveness of the country. In particular, organic agriculture can be oriented to affect the problems in every country caused by globalisation (global warming, pollution,

[+] [+] Corresponding author. Tel.: + 370 613 43624; fax: + 370 208757
E-mail address: jadvyga.ciburiene@ktu.lt

biodiversity loss etc.). The development of international trade and effort to meet various needs of the countries' population increases the demand for foreign trade of organic food import / export. The expenditure of organic food consumed in the EU is about 2% of total food expenditure.

The object of the study is organic agriculture and organic food products.

The aim of the study is to analyse the motives of organic agriculture, organic food production, and export.

The tasks of the study are to characterise the organic agriculture and production of organic food as a sustainable development path; to discuss the production of organic food and its exports; and to characterise the motives of organic food production. The methods used for the research are analysis of scientific literature, statistical classification and comparison, logical comparative analysis and synthesis.

Research results and discussion

Globally, a lot of attention is concentrated on organic agriculture, both for theoretical and practical studies of the various issues and for the development of this activity. The provision of food is one of the most important socio-economic problems which is analysed by foreign (Hansen J., 2001; Almonte C., 2005) and Lithuanian scientists (Laukaitiene A., 2010). Gradually, more and more attention in Lithuania is paid to the research of organic agriculture, increasing production and preserving the environment and its resources at the same time. Harmonised and balanced economic development has been analysed by R. Ciegis (2004) and L.Kliucininkas, R.Ciegis (2008), sustainable development of agriculture in the development of basic principles of organic livestock has been described by I. Skurdeniene, V. Ribikauskas, B. Bakutis (2007).

The characteristics of organic farming, their application and perspectives in Lithuania have been analysed by D. Maskoliunaite 2004; A. Stalgiene, V. Skulskis, V. Masionis (2008); whereas external factors of organic farming have been analysed by V. Skulskis, V. Vitunskiene (2008a). The impact of internal factors on organic farming for the rural development have been characterised and described by V. Skulskis, V. Vitunskiene (2008b). The additional income in rural areas generated by organic farming and organic food products lead to the growth of quality of life which has been described by R. Zemeckis, E. Ribasauskiene (2004). The development of organic farming in Lithuania, according to J. Ciulevicius, J Kirstukas and R. Kripaitis (2007) description, has faced the growth of production costs and operating losses; and due to this, it is necessary to analyse the existing problems and deal with them. A. Kuodys (2010) has examined the production subsidies for organic farms as one of the conditions for their development. The importance of promotion and publicity of organic agriculture and the development of organic food products has been discussed by J. Drozdz (2010).

The National Rural Development Strategy of Lithuania for 2007-2013 has determined the following main priorities of organic agriculture: complex analysis of environmental, economic, and social problems; soil saving and restoration, the protection of environment from pollution; the manufacture of safe, high-quality and market demand-oriented products. Organic agriculture as a farming system is essentially based on natural biological processes and materials to ensure sustainable farming and high-quality agricultural products. It is conceived as healthy and valuable crop cultivation without synthetic additives (fertilisers, pesticides, and other industrial materials), while reducing environmental pollution. Organic

farming is being developed to ensure the sustainable development concept (Bruntland G., 1987) and the compliance with environmental laws (Commoner B., 1971).

The concept of sustainable development is characterised by a substantial connection between the development (economic and social aspects) and the environment – to meet the current needs of the society and not endanger the future generations' needs. Sustainable development ideas are realised by carrying out the Millennium Development Goals, the aims of which were set by the United Nations in 2001 and determined to be achieved by 2015:

- the reduction of poverty and hunger;
- the introduction of universal primary education;
- the promotion of gender equality;
- the reduction of child mortality;
- ensuring of sustainable development around the world and strengthening of the global partnership.

While developing the concept of sustainable development balance between economic activity and the environment, especially nature, B.Commoner (1971) has formulated four ecology laws.

Firstly, everything in nature is connected. This means that in nature all beings are mutually dependent and affect each other. This causes the synergy effect. Secondly, everything has to fit in the same world. This means that everybody has to live and co-exist on the same planet in harmony. There is no place on the planet where unnecessary waste should be thrown. Any type of economic waste has to be understood as a result of human activity. Thirdly, nature knows (can, makes) better. Consistent and profound knowledge of nature improves understanding of the processes and patterns and enables them to be used in economic activities. Essential technological solutions can cause irreversible damage to the natural processes for the current and future generations. Fourthly, in nature, everything has got a price. Nature will always require returning the losses caused by human activity. This return is not defined by size or time and conditioned by natural phenomena of interaction which can be related with the multiplication effect.

Table 1

The main indicators of organic agriculture in European countries in 2009

Indicator	LT	IT	FI	DE	NO	DK
Inhabitants (2010), million	3.1	60.3	5.4	81.8	4.9	5.5
GDP per capita in EUR and relative GDP*, Italy =100	9 271 36	25 900 100	34 000 131	29 500 114	60 400 233	41 700 161
Organically managed agricultural land, share of total land,%	4.0	8.7	7.3	5.6	5.5	5.9
Number of organic producers	2 679	43 029	4 087	21 047	2 851	2 694
Share of organic products in the food market, %	0.5	3.0	1.0	3.4	1.3	7.2

* data of the year 2007

Source: author's calculations based on Pearson, 2012; Lithuanian Statistics Yearbook, 2013

It is estimated that small ecological farms can significantly contribute to solving the agricultural and food product development, the welfare of the rural population, and, thus, increase employment opportunities (Hale, 2008; Diouf, 2008). The link between the proportion of organic certified areas in European countries and the consumption of organic food is weak (Table 1). The data of the main indicators of organic agriculture in Lithuania (LT) were compared with indicators in Italy (IT), Finland (FI), Germany (DE), Norway (NO), and Denmark (DK). Regarding the share of organically managed agricultural land of the total land area, the largest share among the countries was found in Italy – 8.7% but the largest share of organic products in the food market was in Denmark – 7.2%.

The sustainability of the country's agricultural development is characterised by the number of organic farms, the change of certified organic land area, the amount of organic food products' production and exports. The number and size of organic farms in Lithuania is presented in Table 2. During the period of 2004-2011, the number of organic farms increased by 220.5% in Lithuania. The global financial crisis reduced the absolute and relative numbers of organic farms during the period of 2008-2011, whereas, the certified areas of organic farms in absolute numbers and relative rates have increased steadily. The changes indicate the significance of organic farms and their effectiveness factors. These findings suggest that when these farms get bigger, the effectiveness of their activity increases.

The area of certified organic farms in Lithuania increased by 367.4% during the years 2004-2011, i.e. almost 3.7 times. This suggests that organic farms in Lithuania started to increase in their size. The average size of an organic farm in Lithuania in 2011 compared with 2004 has increased by 166.8%, or from 36.46 hectares to 60.82 hectares. The rapid growth of organic farms was caused by the desire of the population to consume cleaner food, seeking to maintain health and caring for the environment.

Table 2

The changes of the number of ecological firms and their size in Lithuania during 2004-2011

Indicator/Year	2004	2005	2006	2007	2008	2009	2010	2011
1.Organic farms, number								
- growth rate, %	1178	1811	2348	2855	2792	2679	2668	2598
- growth by year, %	100.0	153.7	199.3	242.4	237.0	227.4	226.5	220.5
		153.7	129.6	121.6	97.8	96.0	99.6	97.4
2. Certified area, thou.								
hectares	43.0	69.4	102.1	125.5	127.4	135.0	149.1	158.0
- growth rate, %	100.0	161.5	237.5	291.5	296.3	314.0	346.7	367.4
- growth by year, %		161.6	147.1	122.8	101.5	106.0	110.5	106.0
3. Average size of a farm,								
hectares	36.46	38.34	43.49	43.94	45.62	50.38	55.88	60.08
- growth rate, %	100.0	105.2	119.3	120.5	125.1	138.2	153.3	166.8
- growth by year, %		105.2	113.4	101.0	103.8	110.4	110.9	108.8

Source: author's calculations based on Lithuanian Statistics Yearbook, 2013

The export of agricultural products as the activity in the country's balance of payments providing inflows is important to each country. The comparison of the share of agricultural exports and imports in

all the export and import of different countries of the world is presented in Table 3. The data show that Lithuanian agricultural exports during the whole analysed period are higher than imports. In the period of 1999-2001, the average agricultural export accounted for 12.1%, whereas, in 2008 for 14.6%. The share of Lithuanian agricultural imports during the investigated period remains fairly constant: in 1999-2001, the average share was 10.1%, while in 2008 – 10.2%. This shows a good agricultural sector development trend. As shown in Table 3, some countries, for example Germany, Russia, and Great Britain import more agricultural products than they export. The trade of not only agricultural but also of food products, as shown in Table 3, forms an important part of Lithuania's foreign trade.

Food products constitute the main share of agricultural exports and imports. The changes in the share of food in different countries are given in Table 3. Lithuanian export of food products in the total country's export in 2008 was 78.1%, while in the total import – 72.3%.

The share of Lithuanian agricultural food export during the whole analysed period was bigger than imports. In 1999-2001, the average share of the food export was 56.7% and in 2008 - 78.1%. The share of Lithuanian food imports during the analysed period increased from 56.7% to 72.3%. Lithuanian food products' export share is very similar to the share of the USA and Denmark. According to the import structure, Lithuania is similar to Great Britain, Germany, and France. This shows that Lithuanian food products are competitive on the global market. The development of modern and competitive agriculture and food products meets the standards of agricultural production and the requirements of the European Community strategic guidelines for rural development. The export opportunities of Lithuania could be even more favourable if the funds from the promotional programs of agricultural and food products would have been spent on the publication of information about various products and their quality. In 2010, Lithuania took only the 24th place in the EU-27 regarding the promotion and publicity of programmes for agricultural and food products.

Table 3

The share of food products in agricultural export / import in 1999-2008

Country	Export					Import				
	1999-2001	2003-2005	2006	2007	2008	1999-2001	2003-2005	2006	2007	2008
Denmark	17.7	16.7	16.2	16.0	16.0	9.7	10.3	9.7	10.3	11.0
France	10.4	10.4	10.3	10.7	11.3	7.2	7.4	7.0	7.2	7.6
Germany	4.3	4.4	4.3	4.3	4.9	7.3	7.1	6.4	6.7	7.0
Great Britain	7.5	7.9	6.9	8.0	9.2	8.1	8.6	7.5	8.6	9.2
USA	6.8	6.7	6.0	6.2	6.6	3.8	3.9	3.6	3.7	3.8
Russia	1.0	1.4	1.4	2.2	1.7	21.1	13.2	11.8	11.0	10.8
Latvia	8.6	9.7	10.0	11.8	14.2	21.2	14.2	10.1	10.1	12.5
Poland	8.1	8.7	9.2	9.1	9.1	6.6	6.1	6.1	6.2	6.5
Lithuania	12.1	11.0	12.2	14.7	14.6	10.1	8.0	8.7	9.0	10.2
World, average	6.8	6.7	6.0	6.2	6.6	7.1	6.8	6.1	6.4	6.7

Source: author's calculations based on the data of Food and Agriculture Organization of the UN, 2010

It is important to exploit the strengths of the sector (economic, environmental, and socio-economic) and to address the existing weaknesses in the development of agriculture and food production. The expansion of organic agriculture and food production and export development can improve not only the economic situation of producers at the microeconomic level but also to promote the agricultural sector at the macro-economic level. The producers would gain positive impact in the environmental and socio-economic aspects.

Conclusions

1. Organic agriculture and food production is one of the fastest growing agricultural economic activities in Lithuania. It is carried out in compliance with safe farming methods that protect consumers' health and sustain the environment. In this case, it is the most viable farming system. Organic agriculture is closely linked with environmental responsibility at the regional, national, and global levels. At the global level, it has been recognised that in the 20th century, the environment has become one of the most pressing problems that has raised the need for sustainable economic development. Organic agriculture and the production of organic food are one of the ways of solving environmental problems (global warming, environmental pollution etc.).

2. In Lithuania, organic agriculture and the production of organic food products is based on the development of organic agriculture and certified land alteration. Currently, the increase in the number of organic farms (post-2008 financial crisis) has stabilised and this number constituted 2 598 farms in 2011. The growth of the certified organic farm area shows that these farms are becoming larger. The growth of farms allows assuming that this process causes higher productivity of organic agriculture similar to the situation achieved by Denmark, Germany, or Italy.

3. The trade of organic agricultural and food products constitutes a significant part of Lithuanian foreign trade. Both the shares of Lithuanian organic agricultural and food products have increased in the total volume of agricultural exports during the period of 2004-2008. This indicates that both the organic agricultural sector and food production export are competitive on the global market.

4. Modern globalisation leads to the increase of interdependence among the countries and international trade. Taking into account the conditions of internationalisation, manufacturers can achieve a variety of goals: 1) to increase the market share; 2) to reduce operating costs; and 3) take root in the overseas market. The main reasons of organic agriculture and food production development are economic, environmental, and socio-economic motives. These motives show business development incentives at both microeconomic and macroeconomic levels.

Bibliography

1. Almonte, C., Nava, M. (2005). Economics and Policies of an Enlarged Europe. Cheltenham, p. 430.
2. Bruntland G.H. (1987). Our Common Future. UN World Commission on Environment and Development. Retrieved: http://www.un-documents.net/our-common-future.pdf. Access: 01.02.2014.
3. Commoner, B. (1971). The Closing Circle: Nature, Man and Technology. New York.
4. Ciegis, R. (2004). Ekonomika ir aplinka: subalansuotos pletros valdymas. Monografija. Kaunas: Vytauto Didziojo universitetas, p. 552 (Economics and Environment: the Management of Sustainable Development. Monograph. Kaunas: University of Vytautas Magnus).
5. VI „Ekoagrus" (2011). (Public Company "Ekoagrus"). Retrieved: http://www.ekoagros.lt/?q=lt/ node/71.

6. Ciulevicius, J., Kirstukas, J., Kripaitis, R. (2007). Tausojancio ukininkavimo pletojimo Siaures Lietuvos karstiniame regione ekonomines prielaidos. Zemes ukio mokslai, (Economic Assumptions of Sustainable Agricultural Development in the Northern Lithuania Karst Region. Agricultural Sciences), No 14.
7. Drozdz, J. (2010). Neisnaudotos produktu populiarinimo galimybes. Mano ukis (Unused Production Promotion Opportunities. My Farm), Nr. 6, pp.8-9.
8. El-Hage Scialbba, N. (2007).Organic Agriculture and Food and Security. International Conference. Food and Agriculture Organization of UN, No 5.
9. Food and Agriculture Organization of UN. (2010). Retrieved: http://www.faoorg/fileadmin/ templates/ess /essyearbook _2010/c02.xls.
10. Hansen, J. D. (2001). European Integration. An Economic Perspective. New York.
11. Horizon 2020. The Framework Programme for Research and Innovation. (2011). European Commission. Retrieved: http://ec.europa.eu/research/horizon2020/pdf/ proposals/horizon _2020_impact_assessment_annexes.pdf. Access: 01.02.2014.
12. Kliucininkas, L., Ciegis, R. (2008). Darnus vystymasis: aplinka, ekonomika, technologijos. Kaunas: Kauno tecnologijos universitetas (Sustainable Development: Environment, Economy and Technology. Kaunas: Kaunas University of Technology), p. 170.
13. Kuodys, A. (2010). Kaip keitesi ukininku ukiai. Mano ukis (The Evolution of Farmers. My Farm), Nr.4, pp. 26-27.
14. Laukaitiene, A. (2010). Tarptautine konferencija: klimato kaita ir zemes ukis. Mano ukis. (International Conference: the Changes of Climate and Agriculture. My Farm), Nr. 2, pp. 8-9.
15. LR Nacionaline 2007-2013 metu kaimo pletros strategija. (2007). Lietuvos Zemes ukio ministerija. 2007-2013 (The National Strategy for Rural Development in Lithuania Republic. The Ministry of Agriculture of Lithuania Republic). Retrieved: http://www.zum.lt/min/failai/Strategija_NSP_Lithuania_ Access: 01.02.2014.
16. Maskoliunaite, D. (2004). Ekologinio ukininkavimo ypatumai Europoje ir Lietuvoje. Mano ukis (The Features of Organic Farming in Europe and Lithuania. My Farm), Nr. 5, pp. 8-9.
17. Pearson, A. (2012). Linking Organic Farmers and Volunteers. Ecology and Farming. Education, No.2, pp.20-25.
18. Skulskis V., Vitunskiene V. (2008a). Ekologinio ukininkavimo isoriniai veiksniai. Vadybos mokslas ir studijos – kaimo verslu ir ju infrastrukturos pletrai. Kaunas: Spalvu kraite (The Outside Factors of Organic Farming. The Science of Management and Studies – for Rural Business and its Infrastructure Development. Kaunas: Spalvu Kraite), Nr. 14 (3), pp. 2-5.
19. Skulskis, V., Vitunskiene, V. (2008b). Ekologinio ukininkavimo isoriniai veiksniai. Vadybos mokslas ir studijos – kaimo verslu ir ju infrastrukturos pletrai. Kaunas: Spalvu kraite (The Outside Factors of Organic Farming. The Science of Management and Studies – for Rural Business and its Infrastructure Development. Kaunas: Spalvu Kraite), Nr. 15 (4), pp. 3-6.
20. Skurdeniene, I, Ribikauskas, V., Bakutis, B. (2007). Ekologinio ukio privalumai gyvulininkysteje. Kaunas: Latute (The Priorities of Organic Farming in Cattle Breeding. Kaunas: Latute), p.148.
21. Stalgiene, A., Skulskis, V., Masionis, V. (2008). Ekologiski zemes ukio ir maisto produktai. Lietuvos zemes ir maisto ukis. Vilnius: Lietuvos agrarines ekonomikos institutas, p.202 (Organic Agriculture and Food Products. Agriculture and Food Sector in Lithuania. Lithuanian Institute of Agrarian Economics).
22. Zemeckis, R., Ribasauskiene, E. (2004). Ekologinis zemes ukis – ateities ukio modelis. Vilnius: Lietuvos agrarines ekonomikos institutas, p.30 (Organic Agriculture – the Model of the Future Farm. Vilnius: Lithuanian Institute of Agrarian Economics).

ECO OFFICE ACTION IN LATVIA

Modrite Pelse[1], Dr.oec., professor; **Liene Zake**[2], Mg.oec.
Latvia University of Agriculture

Abstract. In the past few years, the subject of sustainable development has become widely discussed among society members and countries worldwide, since it is clear that natural resources have certain limitations and one should think wisely in order to use these resources in a way that will not affect the next generations. There are many sustainable development principles and one of the first things one can do is to change the habits in a workplace by considering proper waste management, reducing energy and paper consumption etc. The authors decided to conduct a research within offices that have considered implementing sustainable development principles in order to become more nature friendly and would like to reduce ecological footprint their company is leaving behind. During this research, the authors use mathematical statistic methods and a questionnaire aimed to understand their action and efficiency. By the term "Eco-office" the authors mean all companies that would like to be more sustainable and nature friendly.

Key words: sustainable development, principles of sustainable development, eco-office, waste management, energy efficiency.
JEL code: Q1; Q57

Introduction

Over the past years both in Latvia and all around the world, there is an increasing tendency to talk about sustainable development, the concept first defined and recognised in Stockholm, 1972 at the Human Environment Conference organised by the United Nations. As it is stated in the European Union Sustainable Development Strategy, the concept of sustainable development has been defined as the development that meets the needs of this generation without compromising future generations to meet theirs. One of the ways to develop and promote sustainable development is to implement sustainable development principles in companies where the able-bodied population spends their working hours in the office premises. The main measures for sustainable development within the company are proper waste management, energy and paper consumption reduction. It is necessary to establish a waste disposal record system to evaluate the increase or decrease of company's assets effectively.

Hypothesis: there is an increasing tendency of sustainable development principle implementation in Latvian companies and this can be done, improved, and developed by every company. In order to confirm or refuse this allegation, the following aim was set: to evaluate the Eco-office activities in Latvia. The following tasks were undertaken in order to achieve the aim:

1) to analyse the theoretical basis for sustainable development and assess the necessity for it;
2) to analyse the activities of Eco-offices in Latvia;
3) to evaluate the indicators of Eco-office performance.

The methods used: surveys, graphical and mathematical statistics, the Wilcoxon method.

[2] Corresponding author. Tel.: + 37127806656
E-mail address: liene.zake22@gmail.com

Research results and discussion

The society and the World's economy depend on air, water, food, raw materials, and organic fuel flow that come from Earth. These flows are caused by pollution and waste streams which, in fact, lead to limited global resources and reduce the ability of the planet to absorb waste and pollution. Food production, the use of resources, and energy is increasing not because of the structural capacity but because of the growing population demands for more food, materials, and energy. In accordance with fundamental regularities, materials and energy used by people and factories do not disappear and can be reused or transformed to waste and pollution. There is a speed limit under which people and capital may use materials and energy or generate waste, without causing harm to people, the economy or the Earth's absorption processes, recovery and self-regulation. Each resource used by humans is limited due to leakage and sources. One would think that if some resources are exhausted, while others are in sufficient quantity, the growth continues but if many sources are emptied and the flow of pollution is congested, it shows that the lifestyle of humans has left a negative impact and that the everyday habits should be changed (Klavina M., Zaloksnis J., 2011).

The concept of sustainable development was defined for the first time in 1987 when the Brundtland Commission established by the United Nations published a report "Our Common Future" (Atstaja Dz. et al., 2011). Sustainable development is defined as the development integrated and balanced by the public welfare, environment, and economics that meets the current social and economic needs of society, and ensures respect for the environment, without compromising the ability of future generations to meet their needs as well as protect biodiversity (Latvijas ilgtspejiga …, 2010). Advisor to the president of the Bank of Latvia Edvard Kusner believes that "sustainable development is not only the growth of prosperity but the conservation of resources for as long as possible." What is sustainable development? On an international level, an agreement on the necessity for sustainable development was first reached in 1992 Rio Summit, which was held in Rio de Janeiro where 150 countries, including Latvia, signed the Action Plan for the 21st century (Agenda 21), which contained the necessary actions for global environmental problems "Think globally, act locally" (Klavins M., 2008). In turn, in 2000, the European Council developed the European Union's development plan as well as its implementation process – the Lisbon Strategy. The objectives set in the Lisbon Strategy are reflected also in the Latvian economic policy, which should be based on the principles of sustainable development in order to maintain the situation where the economic growth rates exceed the environmental pollution and consumption of resources. Only this kind of development can provide a healthy environment for current and future generations, biodiversity conservation, and ecosystem protection. The Latvian long-term economic strategy for economic policy outlines the priority of socio-economic disproportions and risk reduction, where one of the main challenges is to organise an effective system of environmental protection, striving to improve Latvian regulations on the ecological environment as close to the European Union level as possible and taking steps to ensure that the Latvian international commitment on environmental issues is fulfilled (Baranova D., 2004).

Sustainable development is the object of interest for social and political movements as well as for non-governmental organisations and the academic sector. The society has realised that the preservation of the environment for future generations, health condition improvement, non-renewable resource saving as well as many other factors are crucially important to ensure long-term development for each and every country (Baranova D., 2004). Maris Klavins, Vice President of Foundation of Environmental Education

"Keep Latvia Tidy", believes that "sustainable development can be ensured not only by creating an interaction between the economic development of the national economy and the social sphere and environment; between economic sectors and thematic elements but also by involving society members in active formation of the development". The authors believe that companies are independent bodies, which are capable of quick reaction when it is necessary to implement and monitor environmental management systems and to work towards the effective use of resources, thus, saving the company's money. By implementing principles of sustainable development in a company, we automatically promote sustainable development in the whole country, as, for example, by reducing water, energy and other non-renewable natural resource consumption within the company, the greenhouse gas emissions, and the amount of waste would significantly diminish.

In scope of the study, the authors carried out a survey on the principles of sustainable development and activities. It covers 20 companies located in Latvia that have acquired the status and the necessary certification in order to receive the official status of eco office. Eco office certificates can be obtained in Latvia from 2010, and at this moment, there are 87 companies that have acquired this title, of which 85 are located in the region of Riga and 68 of them are international companies ("Neste" Ltd, "White" Ltd, "TNT" Ltd, "Oriflame Latvia" Ltd, "Air Baltic" etc.). Most of eco offices are located in the region of Riga and they are operating in the whole Latvia, thus, promoting eco office movement in Latvia. Eco offices cover a wide range of areas of activity: information technology; cosmetics; heating; pharmaceuticals and many others. On the website of L&T Ltd one can find certain statistics that thanks to the proper performance of 87 eco offices from November 2010 to January 2014 it has been possible to save 1144 trees, 1757080 litres of water and 452231 kWh of electricity. The only company that has the authority to grant offices with the eco office status and certification is L&T Ltd (full name - Lassila & Tikanoja). L&T Ltd is a Finnish company specialising in environmental and property maintenance. L&T Ltd in Latvia provides environmental and waste management as well as property maintenance and cleaning services (Lassila & Tikanoja, 2013). In parallel with the existing core activities, L&T Ltd company has set up another service - L&T Eco Office which aims to collect recyclable materials in offices in order to help saving thousands of trees, million of litres of fresh water and energy. Eco offices are designed for companies and organisations that want to:

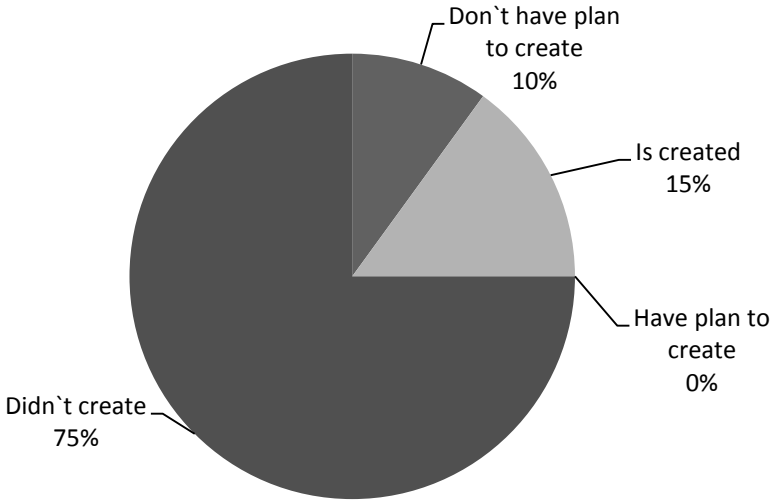
1) be more environmentally friendly and socially responsible;
2) implement proper waste segregation in their offices;
3) reduce their carbon footprint;
4) implement an environmental management system (e.g. ISO 14 000) (About Eco Office, 2013).

Although, eco offices have been working successfully in Latvia for two years, most companies have no understanding on the functions eco offices have and how they get their status. If a company has decided to set up an eco office and receive its status, it must complete an application form on the website www.ekobirojs.lv or contact the representative of L&T Ltd. After the application is submitted, the representative of L&T Eco Office contacts the applicant and agrees upon a meeting. During the meeting, the representative of L&T Eco Office together with the applicant agrees upon the types of materials and locations which will be screening points. Before placing the garbage canisters in the office, the consultant from L&T Eco Offices introduces the office staff with the basic principles of waste sorting, environment pollution and activities that are likely to contribute to sustainable development. After informing the

employees, L&T Eco Office eco boxes are being located in the premises of the company according to the agreed sorting point locations. Next task of L&T Eco Office is to pay regular visits in order to empty the trashcans, assess the quality and amount of sorted materials and to take them out, afterwards drawing up a report on the transferred amount of waste.

The process of becoming an Eco Office and being a client of L&T Eco Office is not free of charge. The monthly fee is EUR 7.10 / LVL 4.99. The price includes: one L&T eco box; emptying eco boxes once a month; disposal of inoperable electrical equipment, dead batteries; eco box for batteries; reports on the amount of sorted and transferred materials; Eco-Office stickers for the office door, the rights to use the L&T Eco-Office logo for internal and external communication (About the Eco Office, 2013). The company may require additional eco boxes and more frequent waste disposal but it would be an additional fee. For each additional eco box, the company has to pay EUR 2.85 / LVL 2. After signing the agreement with the L&T Ltd and accepting their service, the company is granted with the Eco Office certificate.

The survey results show that 93% of respondents have created an Eco Office because they wanted to become socially responsible and environmentally friendly, only 7% of respondents from the representatives of Eco Offices created them with the purpose of saving company's money. It is possible for a company to become socially responsible, environmentally friendly and save the company's money by reducing the consumption of water, paper and electricity, by using energy efficient light bulbs, sorting waste and transferring them into the appropriate recycling plant etc. In order to check funds effectively, the company must establish an accounting system that does calculations by means of the reduction or increase of consumption.



Source: authors' construction based on the questionnaire on "Eco Offices action" results

Fig.1. **Waste disposal records in Latvian Eco Offices**

In the survey, 85 % of respondents admitted that they do not have such a record system that would determine changes in company's funds. Only 15 % of companies have set up such records and regularly follow up the consumption of fund changes. Although most of the respondents have no record system, each month they receive a report from the L&T Eco Office of the disposed waste amount. The main purpose of L&T Eco Office monthly reports is to help companies understand whether the employees have changed their daily habits at work after they received information on proper waste disposal and economical use of paper. If the results have not decreased after a month and even after a year, it can be

concluded that the employees of the company have not changed their daily activities. Eco office employees can access these reports whenever they want and even look into the disposed waste numbers of each eco box located in the company because each box has its own unique code.

L&T Eco Office believes that these reports are very useful and it is a unique service that is not provided by other waste management companies. However, only 47% of respondents believe that the reports are useful and they analyse them in order to think what should be improved in the company to reduce the amount of waste, and 40% believe that such reports are not useful.

The authors carried out a study on companies that offer similar services as L&T Eco Office and concluded that the biggest competitor and the most similar service provider is the Latvian Green Point. The Latvian Green Point is the oldest and most experienced producers' responsibility organisation in Latvia that has been taking care of packaging waste management since its foundation. The mission of the LGP is to ensure an effective system for managing waste packaging, WEEE and WGHE collection system in every region of Latvia (Operating principles of Latvian…, 2013). Nowadays, the Latvian Green Point offers eco boxes in the same size and dimensions as L&T Eco Office but the main difference between the two companies is that the Latvian Green Point does not provide their clients with reports. However, Latvian Green Point has another great advantage instead – they offer recycling bin placement in the company completely free as well as emptying them once a month, regardless of how many bins the company is using. Both of these companies are focused on the sorting of waste, waste transfer and recycling, forgetting that there are many other things that a company can do to reduce the ecological footprint. Ecological Footprint is the area of productive land and water expressed in hectares required to provide a long-term survival for any economics or population at particular standards of living (Footprint, 2013).

The authors believe that companies do not have sufficient information about the possibilities and the available services in Latvia. In the survey, 54% of respondents admitted that they have searched for additional information on the Internet but the information there was insufficient or identically poor on many websites. The authors think that this lack of information is also connected with the fact that eco offices are not very widespread in Latvia and the enterprises are not very interested in this field. Whereas, 46% of the respondents decided to choose to become eco offices just because it was offered to them by their waste management business partner – L&T Ltd. This indicates that this particular company strives to attract already existing partners.

During this research, the authors stumbled upon a few interesting facts about eco office activities in Latvia. For example, the largest eco office in the Baltic States is owned by Oriflame Latvija and it was opened in January 2012. Several hundred thousand euros were invested to build this eco office. In order to diminish the environmental footprint, the office was equipped with energy saving light bulbs, double glazed windows, optimised air flow, efficient lighting, duplexing printer, WC zones with light sensors, toilets with dual flush option and automatic water taps, FSC certified paper, while in other premises waste sorting was ensured by storing eco boxes in the hallways and elsewhere (Oriflame atklaj lielako … , 2012).

By contacting several eco offices, the authors managed to get the reports sent by L&T Ltd, yet, since each company has its own specific features and vary in size, they themselves can be compared neither over years nor over months; thus, the authors chose to analyse the reports of one company. The company supports waste sorting already for two years and in December 2010 obtained the status of Eco Office. By using the Wilcoxon statistical method, the authors analysed whether there were significant

changes in paper consumption from 2011 to 2012. In order to conduct the calculation, the Wilcoxon test was used because it was possible to compare two samples that do not meet the normal distribution. The equation:

$$W = |\sum_{i=1}^{N_r}[\mathrm{sgn}(x_{2,i} - x_{1,i}) \cdot R_i]|$$

Source: the lecture Mathematical Statistics materials

The calculations were performed with MS Excel and for a proper calculation all the necessary data were inserted in Table 1.

The conclusion is made, if T < Tα , n-k , then the null hypothesis is not rejected. If by contrast the sum is greater than the critical value T > T α, n-k then the conclusion is that the difference between the two samples is significant.

Table 1

Calculation of paper consumption based on the Wilcoxon method

Paper	**2011**	**2012**	**dj = x2 - x1**	**|dj|**	**R**	**sgn R**
March	16.51	18.50	1.99	*1*	1	1
January	50.00	47.70	2.30	*-1*	*2*	-2
May	13.62	18.30	4.68	*1*	3	3
June	15.42	20.90	5.48	*1*	4	4
August	17.20	23.02	5.82	*1*	5	5
April	29.50	19.90	9.60	*-1*	6	-6
February	25.90	36.01	10.11	*1*	7	7
November	19.10	6.42	12.68	*-1*	8	-8
June	24.00	8.41	15.59	*-1*	9	-9
September	6.82	23.00	16.18	*1*	10	10
October	5.50	22.80	17.30	*1*	11	11
December	55.60	34.21	21.39	*-1*	12	-12
					Sum (+)	41
					sum (-)	-37
					T	**4**
					T crit	**13**

Source: authors' construction after receiving information from Eco - offices

To compare paper consumption differences between 2011 and 2012, the hypotheses are as follows:

Ho : there are no significant differences between paper consumption in 2011 and 2012;

H1 : there are significant differences between paper consumption in 2011 and 2012.

Since (T = 4) < ($T_{0,05,\ 11}$ = 13) , then with a probability of 95 % the authors assumed that paper consumption between 2011 and 2012 has no significant difference. There are months when the amount of the consumed paper in 2012 is less than in 2011, while in many months, the number of the consumed

amount of paper is higher in 2012 than in 2011. After examining the data, the authors calculated that there were 279.17 kg of paper used in 2011 and in 2012, the amount of the paper used stayed the same. It shows that the company's employees continue to use as much paper as before Eco office creation. The author believes that "L&T Ekobirojs" should re-train company's employees on proper paper usage and point to employees that paper consumption has not changed during the last 2 years.

The authors contacted one of the companies running in Latvia, a multinational company in which they keep records of electricity consumption. Admittedly, this company has developed environmental projects and for their realisation, they have created a special environmental group, which not only develops the project but they also are constantly taking various measures in order to improve the ecological situation in the company. The members of the environment group members shared their experience on how electricity accounting is conducted in their business.

The environmental group has set up a data table in which there are compared costs of the power consumption in cases if company uses halogen bulbs or uses LED bulbs.

Table 2

LED lighting in comparison with halogen lighting in Eco Office

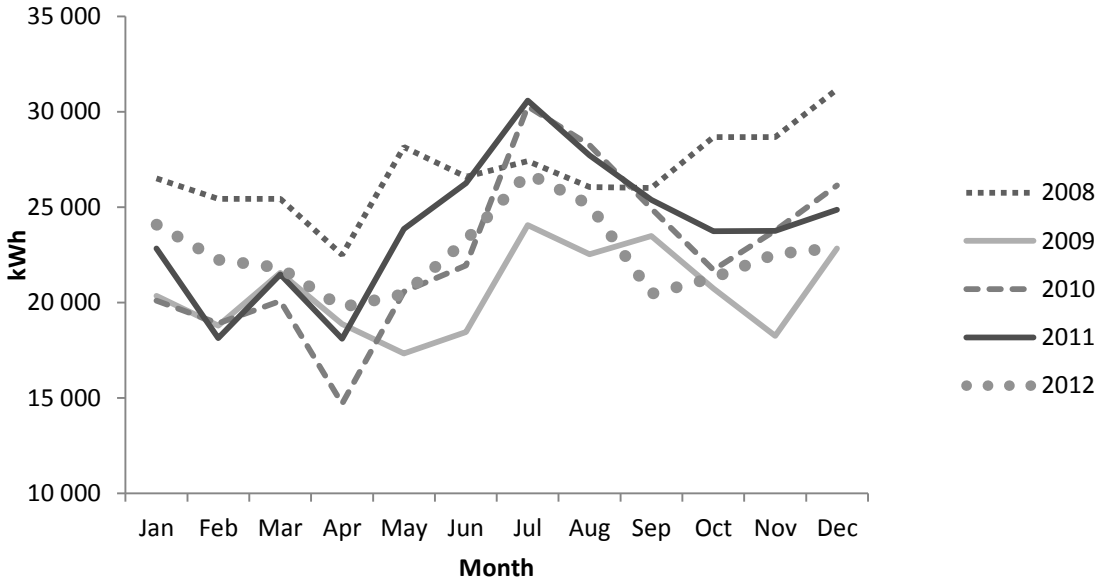
Indicators	Size	Measurement
Average daily consumption	12.00	h
Price of halogen light bulb	7.37 / 5.18	EUR / LVL
Price of LED light bulb	36.99 / 26.00	EUR / LVL
Number of halogen light bulbs	28.00	piece
Number of LED light bulbs	28.00	piece
Electricity cost per kilowatt	0.10 / 0.07	EUR / LVL
Consumption of halogen light bulbs	0.05	kWh
Consumption of LED light bulbs	0.009	kWh

Source: authors' constructions after receiving information from Eco - offices

LED light bulbs are 5 times more expensive than halogen bulbs but LED's power consumption is much smaller, namely, 5.5 times less. When these data were collected and compiled the environmental group created a summary table, showing the amount of savings the company would have if they chose to use LED bulbs. The report is presented in Table 2. Taking into account the lifespan of a LED light bulb, a period of time after which the need for replacement bulbs would appear was calculated, assuming that the life expectancy of one bulb is 50 000 h long. The period was calculated by using the formula: halogen lamp life span / average electricity consumption per day) / 365 days. It was estimated that halogen lamps would have to be replaced every 0.46 years and the cost would be EUR 206.36 / LVL 145.04 each time. At the same time, in order to purchase LED light bulbs for the entire company, it would cost the company EUR 1035.80 / LVL 728 but bear in mind that the life span of a LED bulb is 11.42 years. The differences in electricity consumption were major: power consumption of a halogen light bulb in 0.46 years is 196 KWh, while LED bulbs at the same time consume only 35.28 kWh which is 5.5 times less than halogen light bulbs. The total cost of LED light bulbs would form up to EUR 2290.71 / LVL 1610, while halogen bulbs during the period of 11.42 years would cost up to EUR 12 130.78 / LVL 8526.00. The employees of the company have estimated that the company is able to save EUR 79.39 / LVL 55.80 per month, thus, saving EUR 9840.08 / LVL 6916 in 11.42 years if they choose to use LED bulbs.

By establishing this kind of system, it is important to not only know about it but also keep track of monthly electricity consumption.

The company started to use LED light bulbs in 2008, which is reflected in Figure 3, because the largest electricity consumption in comparison with other years was in 2008. In comparison with 2008, electricity consumption in 2009 has decreased by 23%.



Source: authors' construction based on the information provided by the representatives of Eco-office

Fig.2. **Electric power consumption in Eco Office 2008–2012, kWh**

The results indicate that the company is involved in taking steps to decrease the power consumption. The environmental working group regularly sends reminders to employees to make sure that before leaving the workplace for longer than 15 minutes or going home, it is important to shut down computers and electricity.

The authors believe that every company should set up electricity, water, waste etc. accounting system. After setting up the accounting system, it is easy to calculate the company's savings or overspending on a monthly basis. If sustainable development principles have been implemented in the work of a company, the accounting system makes it easier to determine their effectiveness.

In order to implement sustainable development measures, additional resources are needed (energy saving light bulbs, waste sorting bins, paper with FCS certificate sign) but at the same time, proper and effective use of resources will be cost saving in the long run. This is demonstrated by the data in Table 2.

Conclusions

1. The implementation of sustainable development principles in a country is necessary because the resources are limited, though, the usage of resources will increase due to the growing consumption of goods, and one of the ways to turn sustainable development principles into practice is to implement them in companies.

2. There is a growing demand on eco office services, more and more companies want to be environmentally friendly, socially responsible, and reduce the environmental footprint. In 2012, the Eco

Office status was acquired by 87 companies: "Neste" Ltd, "White" Ltd, "TNT" Ltd, "Oriflame Latvia" Ltd, "Air Baltic" etc.

3. The most common measures for sustainable development in companies is waste sorting and the reduction of energy, water and paper consumption.

4. In order to assess efficiency, companies have the opportunity to use reports prepared by L&T Eco Office or create their own waste accounting system which would enable them to monitor and assess the increase or decrease of their funds.

5. It is important to create a marketing plan focusing on the promotion of eco offices and sustainable development integration into the work of companies.

Bibliography

1. Atstaja, Dz., Dimante, Dz., et al. (2011). *Vide un ekonomika* (Environment and Economics) monografija. Riga: LU Akademiskais apgads, p. 256
2. Baranova, D. (2004). *Ekonomikas attistibas paatrinasanas iespejas Latvija* (Acceleration Possibilities for Economic Development in Latvia). Articles of the University of Latvia. Volume 671. Riga: University of Latvia, p.16.
3. Ekologiskas pedas nospiedums (Footprint). Retrieved: http://www.pdf.lv/lv_LV/ko-mes-daram/sabiedriba/ekologiskas-pedas-nospiedums. Access: 16.01.2013.
4. Kas ir ilgtspejiga attistiba (What is Sustainable Development). Retrieved: http://www.latvija2030.lv/page/8. Access: 12.01.2013.
5. Klavina, M. redakcija (2008). *Vides zinatne* (Environmental Science). Riga: University of Latvia, p. 599.
6. Klavina, M., Zaloksna, J. redakcija. (2010). *Vide un ilgtspejiga attistiba*. (Environment and Sustainable Development). Riga: University of Latvia, p. 334.
7. Lassila & Tikanoja. Retrieved: http://www.l-t.lv/lv/L-T/Lapas/Default.aspx. Access: 12.11.2013.
8. Latvijas ilgtspejigas attistibas strategija lidz 2030.gadam (2010). (Sustainable Development Strategy of Latvia until 2030). Parliament of the Republic of Latvia. Riga, p.100.
9. Latvijas Zala punkta darbibas principi (Operating Principles of the Latvian Green Point). Retrieved: http://www.zalais.lv/lv/par_mums/. Access: 09.11.2013.
10. Oriflame atklaj lielako ekobiroju Baltija (Oriflame Opens the Largest Eco Office in the Baltics) (20.01.2012.). Retrieved: http://www.db.lv/foto-video/foto/oriflame-atklaj-lielako-ekobiroju-baltija-251116. Access: 09.11.2012.
11. Par ekobiroju (About the Eco Office). Retrieved: http://www.ekobirojs.lv/lv/par-ekobiroju/. Access: 25.11.2013.

CONVERGENCE PROCESS OF AGRICULTURAL LAND STRUCTURES IN THE EUROPEAN UNION*

Adam Majchrzak[1], MA, PhD student +

[1] Poznan University of Economics, Poland

Abstract. Economic development is associated with changes in the use of available production factors, including land. Under the Common Agricultural Policy of the European Union, land resources are no longer only a factor of agricultural production but they have become also a source of public goods. The aim of this article is to identify whether convergence processes in the development of agricultural land structures in the EU-25 take place in connection with the functioning of agriculture in the EU Member States under the CAP. The thesis raises that the CAP does not influence directly the way of development of agricultural land structures in the EU Member States, and the possibility of a parallel application of national agricultural policies causes the persistence of the existing differences. At the same time, the concentration of agricultural land patterned on the developments taking place in the EU-15 can be observed in the new Member States. These relationships are shown using synthetic indicators of the agrarian structure in the 25 Member States of the EU for the period of 2003-2010: average farm size, Gini ratio, the Shannon diversity index (SHDI), and using the analysis of convergence.

Key words: convergence, agrarian structures, farms, EU-25.

JEL code: Q15, R52

Introduction

The issues concerning convergence processes is most frequently raised in respect of levelling out differences in the area of economic growth (Barro R.J., Sala-i-Martin X., 1992; Baumol W.J., 1986; Malaga K., 2004). It is usually applied, inter alia, to examine the disparities which are present within specific groups of countries or regions, which in turn can be classified as the so-called convergence clubs. Undoubtedly, one of such groups is the European Union (hereinafter referred to as the EU or the Union) which aim is, among others, to approximate the development level of individual Member States and regions[1]. According to an Article No 174 of the Treaty on the Functioning of the European Union: "In order to promote its overall harmonious development, the Union shall develop and pursue its actions leading to the strengthening of its economic, social, and territorial cohesion. In particular, the Union shall aim at reducing disparities between the levels of development of the various regions and the

* The project was funded by the National Science Centre granted on the basis of a decision No DEC-2011/03/N/HS4/00428

+ Corresponding author. Tel.: + 48618543017; fax: + 48618543017
E-mail address: adam.majchrzak@ue.poznan.pl

[1] In the Preamble of The Treaty on European Union it is stated that the representatives of the Member States resolve to achieve the strengthening and the convergence of their economies. The reduction of development disparities between the EU Member States (and their regions as well) is one of the basic targets of the common policy.

backwardness of the least favoured regions". Those regions include rural areas[2]. What is more, the convergence is one of the main targets of the EU regional policy in 2007-2013 financed by the European Regional Development Fund, the European Social Fund, and the Cohesion Fund (Glodowska A., 2012; Bal-Domanska B., 2009). It is justified by the economic differentiation of the "old" Member States of the EU and those which accessed the EU in 2004 and 2007.

In respect of the agricultural sector, in literature, the issue of convergence is raised when considering the support mechanisms in the view of economy liberalisation and globalisation processes, including the trade of agri-food products (Czyzewski A., Kulyk P., 2009; Kulyk P., Czyzewski A., 2010) as well as the transformation of agriculture related with instruments of the Common Agricultural Policy (CAP) of the Union (Grzelak A., Brelik A., 2011; Baer-Nawrocka A., Markiewicz N., 2012). However, in contrast to regional policy, the aims of the CAP do not refer to levelling the differences which are present in the agricultural sector between Member States of the EU[3]. What is more, the varied level of support between the Member States of the EU-15 and EU-12 is noteworthy. The differences, which are beneficial for the countries of the Western Europe (Kulyk P., 2008)[4], can magnify the existing disparities. Although, the economic growth is connected with the changes of available productive factors, it must be emphasised that it not always leads to the solution of agricultural sector problems. In some cases, it might deepen the existing disparities (Czyzewski A., Kulyk P., 2004). It is especially significant when regarding the land. Despite its immovability, the progress of civilisation causes changes in the purpose and structure of that resource. However, in case of the farming land the following conflicts arise between:

- the use of the agricultural resource of the production potential to produce food, excluding the land of the agricultural production along with keeping its potential and the permanent allocation of the land for non-agricultural purposes;
- the promotion of integration processes and land concentration in accordance with the efficiency approach, institutional intervention aiming at the implementation of agricultural model based on family farms and the protection of small, non-profitable farms which play the role of landscape protectors.

Keeping the above in mind, the aim of the paper is the identification and evaluation of the unification process regarding the agrarian structures of the Member States of the EU. The same, the main issue is to answer the question whether there the process of the differences diminishing regarding the farms size including land classes exists or whether the currently existing differences are deepened on the economic convergence basis in the Union and the functioning of the agriculture within the CAP. The hypothesis is presented that the CAP does not impose upon the Member States any specific direction of the development of agricultural land structures, and a possibility of simultaneous use of national agricultural policies causes the existence of present differences. Alongside, a concentration of agricultural land can be

[2] The implementation of the aim is monitored by the EU bodies (Monfort P., 2008).

[3] However, it must be emphasized that in a period of 2000-2006 the aim of structural policy consisting in the support of lesser developed countries in which the level of GNP per inhabitant, calculated for the past three years according to the purchasing power parity was lower by 75% of an average level in the EU, was also financed from the European Agriculture Guidance and Guarantee Funds. Within the structural policy in 2004-2006 in Poland there were implemented, inter alia, Sectoral Operational Programme "Restructuring and Modernisation of the Food Sector and Rural Development".

[4] As F. Tomczak (2009) points out, levelling of the agricultural support level, at least in the domain of direct payments does not guarantee the development acceleration in the convergence process of the EU-12 with reference to the Western Europe. The necessary condition of disparity decrease is an adequate increase of national budgetary resources for the agriculture within the national agricultural policy.

observed in the new Member States which is followed in accordance to processes in the EU-15 Member States.

Sources and methods

A sigma-convergence was used to evaluate the unification processes of agrarian structures in the EU Member States (Malaga K., 2004). It was calculated for an average size farm, concentration level of agricultural land and the differentiation level of the agrarian land share, and the ratio of farms according to area groups[5]. The sigma-convergence parameter level was calculated on the basis of a following equation:

$$\sigma(t) = \sqrt{\frac{1}{n}\sum_{i-1}^{n}\left(\ln y_y(t) - \overline{lny_t}(t)\right)^2} \qquad (1)$$

For the results of sigma-convergence, a regression equation was estimated:

$$\sigma(t) = \alpha_0 + \alpha_1 t \qquad (2)$$

on the basis of which it is possible to assess sigma-convergence. The convergence processes (interpreted as a reduction in time of differences between the analysed countries) can be observed when α_1 parameter is below zero. Taking into consideration that the linear trend estimation is not the best method to verify the σ[6] convergence, the evaluation of σ convergence occurrence was performed with the use of the analysis of change-of-direction (COD) of standard deviation of natural logarithms of the examined variables on the basis of the diagram.

This paper uses Gini coefficient (referred to also as Gini ratio) to evaluate the concentration of arable land in farms in individual countries according to area groups. The mentioned coefficient is calculated on the basis of following equation:

$$G = 1 - \left(\sum_{i=1}^{k} \frac{x_{cum_i} + x_{cum_{i-1}}}{2} \times \left(n_{cum_i} - n_{cum_{i-1}}\right)\right) \div \frac{x_{cum_k} n_{cum_k}}{2}, \qquad (3)$$

where:

x_{cum_i} – cumulative proportion of the characteristic for the interval i;

n_{cum_i} – cumulative proportion of the population for the interval i;

$x_{cum_0} = 0$;

$n_{cum_0} = 0$.

It ranges between <0;1>, and 0 is achieved in case of homogenous distribution – when each unit possess the same ratio of a total value of the feature, in turns it reaches 1 when the total value of the characteristic is possessed by one unit only of the whole group (only one observation is different from

[5] The European Union farm typology classifies the farms according to the size of arable land as follows: less than 5 ha – a very small farm, from 5 ha to 10 ha – a small farm, from 10 ha to 20 ha – an average-small farm, from 20 ha to 30 ha – an average-big farm, from 30 ha to 50 ha – a big farm, above 50 ha – a very big farm. This paper used the classification implemented by the Eurostat which additionally distinguishes the farms of the area up to 2 ha, from 2 ha to 5 ha, from 50 ha to 100 ha, and above 100 ha.

[6] It results from the characteristics of non-linear variability of changes between the levels of analysed variables as well as from the fact that the above method does not allow to identify a precise tendency on changes differentiation of tested variable in particular years (Pruchniak M., Rapacki R., 2007).

zero) (Pulaska-Turyna B., 2008). It means that the higher the value of the ratio, the higher the concentration level of a specific variable, and the same the bigger the inequality in a particular area.

The Shannon diversity index was used (SHDI) to show the differentiation of arable land area and the number of farms in area groups (Jost L., 2006; Zawalinska K., 2010):

$$SHDI = -\sum_{i=1}^{m}(P_i \cdot \ln P_i), \qquad (4)$$

where *i* respectively denotes particular area groups or classes of the economic size and P_i is the proportion of *i* (area groups or classes of the economic size) relative to the total number of specific groups (classes). *SHDI* assumes a value of 0 when in a tested structure there is only one kind of use and a maximum value (equal to the natural logarithm of this proportion multiplied by -1) when there is a complete evenness of the distribution of individual classes.

The range of this research covers 25 Member States of the EU, specifying "old" (EU-15) and "new" (EU-10) Member States which accessed the EU in 2004. The analyses used the statistical data concerning the arable land structures[7]. The data are taken from the Eurostat database for the years 2003-2010.

Research results and discussion

The agrarian structures in the EU Member States are significantly differentiated which results from natural features (accessibility of sources, the quality of soil, climate, shape of the terrain) which determine the chosen agricultural production from agricultural traditions including the significance of farming in the economy of individual country as well as from the past political and legal conditions. This is done since the reprivatisation processes take place in those countries where the State owned the agricultural land until the present day. The fragmentation of agricultural grounds is dependent upon the accepted assumptions. What is more, the existing differentiation is also a result of a deficiency of the development direction of agricultural land structures in the Member States at the EU level and also the shortage of uniform regulations on forms of the agricultural land trade. As a result of the above conditions according to the Eurostat, the average size of a farm in 2003 ranged from 1 ha in Malta to 82.7 ha in the Czech Republic (Table 1).

Amongst the EU-15 Member States, the range of differentiation of the indicated feature reached from 4.8 ha in Greece to 65.9 ha in the United Kingdom. In the analysed period, the above ranges were expanded in accordance with the reduction of an average farm in three countries (in Malta, Cyprus, and Sweden), and the increase in other countries – by 0.1% in Greece and as much as 182% in Bulgaria. In 2010, the average size of the farm was from 0.9 ha to 92.4 ha. The increase of the size of an average farm in most of the "old" and "new" Member States enables to presume that in both groups a process of agricultural land concentration is taking place – it will be verified in the further parts of the paper. However, it does not mean that the processes of the unification of an average farm size are present

[7] The arable land according to the Eurostat methodology contains: the total area taken up by arable land, permanent pasture and meadow, land used for permanent crops and kitchen gardens.

among the EU Member States. The sigma convergence results obtained in the analysis deny it in respect of the EU-25 as well as individual Member States groups of the EU-15 and the EU-10 (Table 3).

Table 1

Average size of farm (ha) and concentration of arable land in farms in individual countries according to area groups (Gini ratio) in the European Union Member States in years 2003-2010

State	Average size of farm (ha)				Concentration of arable land in farms in individual countries according to area groups – *Gini ratio*			
	2003	2005	2007	2010	2003	2005	2007	2010
Austria	18.8	19.2	19.4	19.3	0.60	0.60	0.61	0.58
Belgium	25.9	27.4	29.2	32.4	0.56	0.55	0.55	0.54
Cyprus	3.5	3.4	3.7	3.1	0.73	0.69	0.71	0.71
Czech Republic	82.7	86.4	91.4	---	0.87	0.85	0.84	---
Denmark	55.1	52.8	60.2	65.3	0.53	0.55	0.57	0.58
Estonia	21.6	29.9	39.0	48.4	0.78	0.79	0.78	0.78
Finland	30.1	32.2	33.8	36.1	0.45	0.45	0.47	0.48
France	47.5	49.8	53.3	54.9	0.57	0.56	0.56	0.58
Germany	41.4	43.8	45.9	56.1	0.66	0.66	0.66	0.62
Greece	4.8	4.8	4.8	4.9	0.63	0.63	0.63	0.65
Hungary	6.1	6.4	7.5	8.8	0.90	0.91	0.92	0.91
Ireland	31.7	31.8	32.3	35.7	0.45	0.44	0.44	0.48
Italy	6.7	7.4	7.6	8.0	0.75	0.73	0.73	0.75
Latvia	11.8	13.3	16.5	21.6	0.67	0.68	0.68	0.70
Lithuania	9.2	11.0	11.5	13.7	0.61	0.62	0.68	0.71
Luxemburg	52.3	52.9	57.2	60.1	0.49	0.50	0.48	0.48
Malta	1.0	0.9	1.0	0.9	0.37	0.35	0.34	0.37
Netherlands	23.8	24.4	25.5	26.5	0.56	0.55	0.55	0.56
Poland	6.7	6.0	6.5	9.6	0.67	0.69	0.67	0.62
Portugal	10.4	11.4	12.7	12.1	0.81	0.81	0.82	0.82
Slovakia	30.6	28.3	29.1	---	0.95	0.95	0.94	---
Slovenia	6.3	6.3	6.5	6.5	0.47	0.49	0.51	0.53
Spain	22.5	23.4	24.2	24.6	0.78	0.78	0.78	0.77
Sweden	46.8	42.6	43.2	43.6	0.56	0.59	0.60	0.61
United Kingdom	65.9	64.2	64.8	92.4	0.68	0.68	0.68	0.60

Source: author's construction based on the Eurostat 2003-2010

It is due to the positive parameters of regression equation of sigma convergence in particular years for individual groups. Despite the fact that the level of α_1 parameter is negative in the "new" Member States, the figure shows (Figure 1) that it is a result of changes which took place between the years 2007 and 2010. Drawing the conclusion of the occurrence of the convergence processes in this case is not justified either taking into consideration the increasing trend of changes in the preceding periods.

Table 2

Diversity of utilised agricultural area and number of farms according to area groups (SHDI) in the European Union Member States in years 2003-2010

State	Diversity of utilised agricultural area according to area groups – SHDI				Diversity of number of farms according to area groups - SHDI			
	2003	2005	2007	2010	2003	2005	2007	2010
Austria	1.86	1.86	1.86	1.86	1.88	1.89	1.91	1.92
Belgium	1.70	1.68	1.65	1.61	2.02	2.02	2.03	2.03
Cyprus	2.05	2.05	2.05	2.05	0.97	0.99	1.02	0.88
Czech Republic	0.53	0.56	0.56	0.53	1.78	1.86	1.89	---
Denmark	1.32	1.34	1.20	1.11	1.88	1.87	1.87	1.88
Estonia	1.48	1.27	1.16	1.04	1.77	1.85	1.91	1.95
Finland	1.67	1.65	1.64	1.62	1.89	1.90	1.92	1.93
France	1.32	1.27	1.22	1.16	2.04	2.04	2.03	2.02
Germany	1.46	1.42	1.38	1.30	2.03	2.03	2.03	1.97
Greece	2.01	2.02	2.00	2.03	1.34	1.33	1.33	1.32
Hungary	1.45	1.39	1.29	1.31	0.82	0.81	0.82	0.92
Ireland	1.67	1.65	1.66	1.64	1.84	1.85	1.84	1.85
Italy	2.00	2.00	2.00	1.98	1.33	1.42	1.42	1.43
Latvia	1.88	1.85	1.77	1.63	1.69	1.73	1.78	1.81
Lithuania	1.91	1.88	1.84	1.76	1.43	1.54	1.52	1.60
Luxemburg	1.23	1.21	1.18	1.15	1.93	1.94	1.93	1.92
Malta	1.14	1.08	1.06	1.16	0.46	0.41	0.39	0.43
Netherlands	1.73	1.72	1.70	1.69	2.00	2.00	2.01	2.01
Poland	1.94	1.98	1.99	1.96	1.46	1.39	1.45	1.62
Portugal	1.59	1.56	1.53	1.49	1.38	1.42	1.47	1.40
Slovakia	0.37	0.43	0.50	0.46	0.76	0.78	0.96	---
Slovenia	1.75	1.81	1.85	1.89	1.45	1.46	1.48	1.50
Spain	1.48	1.47	1.46	1.46	1.82	1.84	1.85	1.86
Sweden	1.43	1.46	1.43	1.41	1.94	1.95	1.96	1.93
United Kingdom	1.01	1.03	1.00	0.91	2.06	2.06	2.02	1.94

Source: author's construction based on the Eurostat 2003-2010

The phenomenon of agricultural land concentration was expressed by Gini coefficient in that paper. The data presented in Table 1 show that, in this respect, there is no common trend of transformation for the Member States. One can distinguish countries in which the concentration level grows (e.g. Denmark, Finland, Lithuania, Latvia) but also the countries which are characterised by an opposite process (e.g. Austria, Czech Republic, Poland). A relatively constant value of Gini coefficient can be noticed in Estonia, Spain, and Hungary. It is noteworthy that the intensification of a mentioned process took place mostly between 2007-2010 as is the case of the average size of farms – see Lithuania, Germany, the United Kingdom. Although, occurring changes enable to state that in respect to concentration processes of

arable lands in the EU-25 Member States as well as the EU-15 and the EU-10, the convergence processes take place (Table 3, Figure 1), it must be stressed that their level results from the changes which occurred after 2007. In the preceding period, on the basis of the sigma convergence level, it is justified to state that the differentiation of Gini ratio was increasing in the EU-10. However, the processes of structures unification took place in the Western European countries which resulted in almost stable value for the EU-25.

Table 3

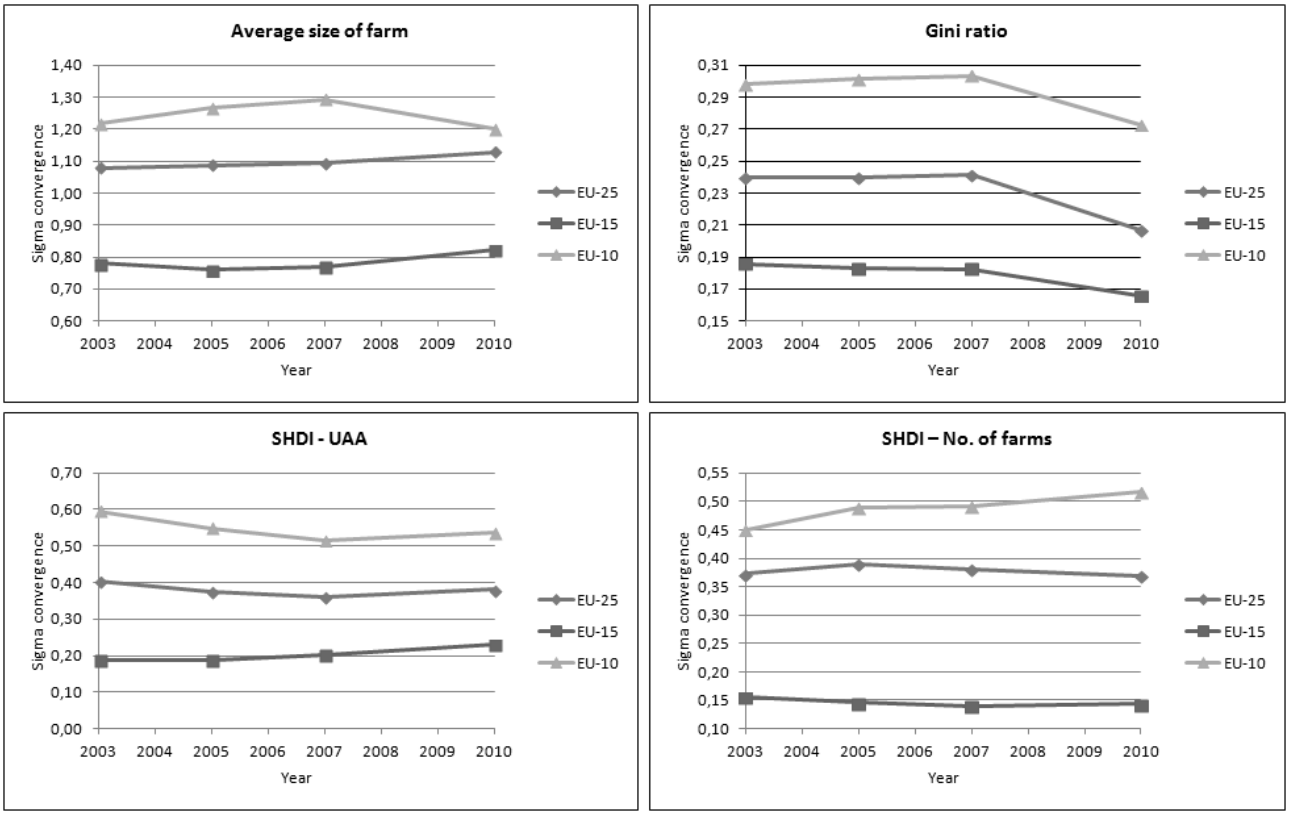
Sigma convergence values of variables characterising agrarian structures in European Union, the EU-15 and the EU-12 in the years 2003-2010 and the values of their trend function parameters

Variable / Year		2003	2005	2007	2010	Trend function parameters	
						α_1	α_0
Average size of farm (ha)	**EU-25**	1.08	1.09	1.09	1.13	0.007	-12.63
	EU-15	0.78	0.76	0.77	0.82	0.007	-12.52
	EU-10	1.22	1.27	1.29	1.20	-0.002	6.10
Concentration of arable land in farms in individual countries according to area groups – *Gini ratio*	**EU-25**	0.24	0.24	0.24	0.21	-0.005	9.54
	EU-15	0.19	0.18	0.18	0.17	-0.003	5.73
	EU-10	0.30	0.30	0.30	0.27	-0.006	7.40
Diversity of utilised agricultural area according to area groups – SHDI	**EU-25**	0.40	0.38	0.36	0.38	-0.003	6.35
	EU-15	0.19	0.19	0.20	0.23	0.006	-12.20
	EU-10	0.60	0.55	0.51	0.54	-0.009	17.55
Diversity of number of farms according to area groups - SHDI	**EU-25**	0.37	0.39	0.38	0.37	-0.001	2.56
	EU-15	0.16	0.15	0.14	0.14	-0.002	3.47
	EU-10	0.45	0.49	0.49	0.52	0.009	-16.66

Source: author's construction based on the data from Tables 1 and 2

Clear unification processes of arable land in the Member States of the EU cannot be presumed in the analysed period on the basis of changes of agricultural land differentiation and the number of farms in area groups expressed by Shannon index. They take place despite the growing differentiation of arable land distribution in particular area group (Table 2). In case of that variable, the level of α_1 parameter for the EU-25 indicates the existing convergence processes; however, the figure shows the opposite phenomenon takes place after 2007 (Table 3, Figure 1). Similarly, the situation develops for the "new" Members but a process of SHDI divergence can be observed in the EU-15 group (SHDI calculated for the arable land distribution in area groups).

The Shannon diversity index estimated for the number of farms shows that there are divergence processes taking place in the EU-15 group and a minor tendency of the structure unification in respect of other analysed groups.



Source: author's construction based on the data from Table 3

Fig. 1. **Sigma convergence values of variables characterising agrarian structures in European Union, the EU-15 and the EU-12 in the years 2003-2010**

Conclusions

The performed analyses of selected variables describing agrarian structures in the Member States of the European Union in the period of 2003-2010 do not enable to observe explicit unification processes of those structures. On that basis, it is justified to acknowledge the thesis that a specified direction of a development of agrarian land structures does not exist in the EU. It results from the fact that countries can implement their national agricultural policies but also from a wide range of the Common Agricultural Policy instruments. At the same time, it is noteworthy that the unification processes in respect to agricultural land do not go hand in hand with the economic convergence processes which are present amongst the Member States and regions of the EU. On the contrary, a major impact on changes parameters which took place between 2007 and 2010 suggests that the transformation in respect to agrarian structures need a constant monitoring. What is more, specifying any long-term development trend seems to be doubtful due to the changing shape of the CAP instruments which influence the agricultural land market but also the increasing differentiation of agricultural structures which result from the new accessions to the European Union.

Bibliography

1. Baer-Nawrocka, A., Markiewicz, N. (2012). Procesy konwergencji/dywergencji w zakresie wydajnosci pracy w rolnictwie Unii Europejskiej – analiza regionalna (The Processes of Convergence/Divergence in the Field of Labour Productivity in Agriculture of the European Union - Regional Analysis). *Journal of Agribusiness and Rural Development,* Volume 3(25), pp. 13-23.
2. Bal-Domanska B. (2009). *Ekonometryczna analiza sigma i beta konwergencji regionow Unii Europejskiej (Econometric Analysis of Sigma and Beta Convergence of the European Union Regions)* [in:] J. Lyko, *Ekonometria. Zastosowanie matematyki w Ekonomii (Econometrics. The Use of Mathematics in Economics)*. Wroclaw: Wydawnictwo Uniwersytetu Ekonomicznego we Wroclawiu (Wroclaw: Wroclaw University of Economics Publishing House), pp. 9-24.
3. Barro, R.J., Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy,* Volume 100, pp. 223-251.
4. Baumol, W.J. (1986). Productivity Growth, Convergence, and Welfare: What the Long-run Data Show. *American Economic Review,* Volume 76, pp. 1075-1085.
5. Czyzewski, A., Kulyk, P. (2009). Konwergencja czy dywergencja mechanizmow wsparcia sektora rolnego? (Convergence or Divergence of the Agricultural Sector Support Mechanisms?). *Zeszyty Naukowe Szkoly Glownej Gospodarstwa Wiejskiego w Warszawie. Problemy rolnictwa swiatowego (Scientific Papers of Warsaw University of Life Sciences. The problems of world agriculture)*, Volume 8, pp. 41-51.
6. Czyzewski, A., Kulyk, P. (2004). Wzrost gospodarczy jako czynnik przeksztalcen w gospodarce zywnosciowej w Polsce okresu transformacji (Economic Growth as a Factor of the Transformation of the Food Economy in Poland in the Transition Period). *Roczniki Naukowe SERiA* (Annals of the Polish Association of Agricultural and Agribusiness Economics)*,* Volume 3.
7. Eurostat, Agriculture and Fisheries Database. Retrieved: http://epp.eurostat.ec.europa.eu/portal/page/portal/agriculture/data/database. Access: 20.09.2013.
8. Glodowska, A. (2012). Znaczenie konwergencji w aktualnej i przyszlej polityce strukturalnej Unii Europejskiej (The Importance of Convergence in Current and Future EU Structural Policy). *Nierownosci Spoleczne a Wzrost Gospodarczy (Social Inequality and Economic Growth),* Volume: 24, pp. 174-185.
9. Grzelak A., Brelik A. (2011). Procesy konwergencji czy dywergencji w zakresie dochodow gospodarstw rolnych w Polsce w regionach FADN po integracji w UE? (The Processes of Convergence or Divergence in Terms of Farm Incomes in FADN Regions of Poland in the EU Integration?) *Prace Naukowe Uniwersytetu Ekonomicznego we Wroclawiu – Polityka ekonomiczna (Scientific Papers of the University of Economics in Wroclaw - Economic policy)*. Wroclaw: Wydawnictwo Uniwersytetu Ekonomicznego we Wroclawiu (Wroclaw: Wroclaw University of Economics Publishing House), pp. 201-211.
10. Jost, L. (2006). Entropy and Diversity, *Oikos,* Volume 113, Issue 2, pp. 363-375.
11. Kulyk, P., Czyzewski, A. (2010). *Konwergencja w polityce wsparcia sektora rolnego. Mit czy rzeczywistosc (Convergence in the Support Policy of the Agricultural Sector. Myth or Reality)* [in:] D. Kopycinska (ed.), *Wybory podmiotow decyzyjnych w warunkach globalizacji (The Choices of Decision-making Bodies in the Conditions of Globalisation).* Szczecin: Uniwersytet Szczecinski (Szczecin: University of Szczecin), pp. 196-208.
12. Kulyk, P. (2008). *Dysproporcje w systemie wsparcia rolnictwa panstw UE i ich uwarunkowania (Disparities in the System of Agricultural Support in the EU Member States and its Determinants)* [in:] A. Mickiewicz, P. Mickiewicz (ed.), *Zrownowazony rozwoj lokalny, unijne instrumenty wsparcia rolnictwa i obszarow wiejskich w latach 2007-2013 (Local Sustainable Development, EU Instruments of Agriculture and Rural Areas Support in 2007-2013).* Szczecin.
13. Malaga, K. (2004). *Konwergencja gospodarcza w krajach OECD w swietle zagregowanych modeli wzrostu (Economic Convergence in OECD Countries in the Light of the Aggregate Growth Models)*. Poznan: Wydawnictwo Akademii Ekonomicznej w Poznaniu (Poznan: Poznan University of Economics Publishing House), pp. 22-25.
14. Monfort, P. (2008). Convergence of EU Regions. Measures and Evolution, Working papers. *A Series of Short Papers on Regional Research and Indicators Produced by the Directorate-General for Regional Policy,* No. 01. Retrieved: http://ec.europa.eu/regional_policy/sources/docgener/work/200801_convergence.pdf. Access: 26.09.2013.
15. Prochniak, M., Rapacki, R. (2007). Konwergencja beta i sigma w krajach postsocjalistycznych w latach 1990-2005 (Beta and Sigma Convergence in the Post-socialist Countries in 1990-2005). *Bank i kredyt (Bank and Credit)*, Volume: sierpien-wrzesien (August-September), p. 44.
16. Pulaska-Turyna, B. (2008). *Statystyka dla ekonomistow (Statistics for Economists)*. Warszawa: Difin, pp. 98-102.

17. Tomczak, F. (2009). Zmiany i reformy WPR: konsekwencje dla rolnictwa i finansowania polityki rolnej (CAP Changes and Reforms: Implications for Agriculture and Agricultural Policy Funding). *Program Wieloletni 2005-2009, Raport nr 126 (The Multi-annual Programme 2005-2009, Report No 126)*, Warszawa: Instytut Ekonomiki Rolnictwa i Gospodarki Zywnosciowej – Panstwowy Instytut Badawczy (Warsaw: Institute of Agricultural Economics and Food Economy – Polish Scientific Institute), p. 60.

18. Zawalinska, K. (2010). *Wielofunkcyjnosc rolnictwa w ujeciu modelowym (Multifunctionality of Agriculture - Model Approach)* [in:] J. Wilkin (ed.), *Wielofunkcyjnosc rolnictwa. Kierunki badan, podstawy metodologiczne i implikacje praktyczne (Multifunctionality of Agriculture. Directions of Research, Methodological Basics and Practical Implications)*, Warszawa: Instytut Rozwoju Wsi i Rolnictwa PAN (Warsaw: Institute of Rural Development and Agriculture of Polish Academy of Science).

DETERMINATION OF VALUABLE AGRICULTURAL LAND IN THE FRAME OF PREPARATION OF COUNTYWIDE SPATIAL PLANS: ESTONIAN EXPERIENCES AND CHALLENGES

Siim Maasikamäe[1], PhD; **Evelin Jürgenson**, MSc.; **Merit Mandel**, MSc.; **Piret Veeroja**, MSc.
Department of Geomatics, Estonian University of Life Sciences

Abstract. The protection of agricultural land is an important issue because the area of food production per capita will be decreasing by several estimations in the next decades. The planning measures to ensure the preservation of valuable arable land are among the objectives of county plans in Estonia. However, there is no clear methodology for determination of valuable agricultural land as of now. The aim of the study was to develop methodology in order to determine valuable agricultural lands in the frame of preparation of countywide spatial plans in Estonia. The paper presents a description of that methodology and the possibilities to implement it in the course of preparation of county plans. The idea of the methodology is to calculate the complex value index for plots of agricultural land. The complex value index characterises the plots of agricultural land from the agriculture production perspective, and the fiscal value of land is not considered thereof. The soil fertility, spatial properties, and other features of plots have been considered for calculation of the complex value index for Jogeva County in Estonia. All tasks were made in an ArcGIS environment and different digital maps were used as data sources. The calculated indexes made the plots comparable from the agriculture production perspective and conditions for simulation of the different situations of valuable land areas were created. The simulation of different situations of valuable arable land indicated that the proposed methodology gave planners flexible tools for determination of valuable agricultural land.

Key words: valuable agricultural land, complex value index, determination of valuable land area, simulation of different situations.

JEL code: Q38

Introduction

The importance of agricultural land is increasing worldwide because of the need to feed a growing population. It is projected that the world population will increase by 2.3 billion people between 2013 and 2050 (UN, 2013). According to estimates of the FAO (2009), global food production needs to increase by nearly 70% by 2050. On the contrary, the area of arable land per capita in 2010 was 0.23 hectare and the projection for the 2050 is 0.181 hectares (Alexandratos, N. and Bruinsma, J. 2012:108). There are more similar prognoses (Bruinsma, J. 2011; FAO, 2002) that indicate a decrease of arable land per capita in the near future. The global processes clearly indicate that agricultural land should be used more efficiently and not converted to non-agricultural land.

[1] Corresponding author *E-mail: Siim.Maasikamae@emu.ee*

Agriculture has historically been the main user of rural land but today it has to compete for land with other land use types. This competition is a complicated phenomenon because the value of agricultural land has diverse meaning for people with different backgrounds. Real estate developers, for example, are interested in possibilities to convert raw land to build up land and earn a solid profit as a result. The occurrence of rare species of plants or animals on particular areas makes the land valuable from a nature protection point of view. The productivity of soils and land tillage conditions make land valuable for farmers. Therefore, a plot of valuable agricultural land can be and often is the place of contradicting interests.

Rural land use planning has to deal with the negotiation of the wishes and goals of various stakeholders. It is necessary to preserve areas for nature protection and also for food production (Kerselaers, E. et al., 2013). The arable land area per capita in the Baltic States is higher than the world average (Linner, H. and Messing, I., 2012). The area of arable land per capita in Estonia was 0.47 hectares in 2011 by the World Bank data (http://data.worldbank.org/indicator/AG.LND.ARBL.HA.PC). But is it enough to secure its people with food in the longer perspective? Since arable land value in the world increases and climate conditions will foster agricultural production in the Northern Europe, Estonian land resources become more important (Linner, H. and Messing, I., 2012). This, in turn, raises the importance of rural planning.

One of the tasks for planning rural areas is to create conditions for the protection of valuable agricultural land from conversion into non-agricultural land. The problem is not topical for Estonia only. For example, Swedish law limits building on agricultural land but it does not work in practice, because municipal governments have strong influence over local land use planning (Linner, H. and Messing, I., 2012). As of now, the protection of agricultural land and, in particular, arable land is not clearly settled in Estonia. Uncontrolled real estate development has often led to the conversion of arable land into built up land (Maasikamäe, S. et al., 2011) and even small real estate development areas on arable land can worsen land use conditions (Veeroja, P. et al., 2013).

The preparation of the next round of county plans was initiated by the Estonian Government (Order No 337, passed 18.07.2013.) (Maakonnaplaneeringute … 2013). The Planning Act (2002) is the legal basis for preparing all spatial plans, including county plans, in Estonia. According to this act the definition of general provisions for the use of land and water areas and the planning measures to ensure the preservation of valuable arable land are among the objectives of a county plan. However, there has not been a clear vision and methodology for determination of valuable agricultural land until now (Lähteseisukohad …, 2013).

The need for the methodology of determination of the areas of valuable agricultural land in the frame of preparation of county plans was the starting point of the study. The value of agricultural land has been estimated only from the farming point of view. Valuable landscapes and areas of high natural value were not subjects of the study. The methodology does not use any economic calculations, because it is very difficult, if not impossible, to predict the production costs and prices of agricultural products for 40–50 years ahead. The question is rather: will we have enough valuable land for agriculture in 50 years in Estonia?

The paper presents the results of the implementation of the methodology for determination of valuable agricultural land. The aim of the study is to evaluate the expediency of the methodology of determination of valuable agricultural lands in the frame of preparation of countywide spatial plans. The hypothesis of the study is that the determination of valuable agricultural land on the basis of soil site class and complex of factors will give different results. Research tasks are: a) to describe the methodology of determination of valuable agricultural land; and b) to show the possibilities to implement that methodology in the frame of preparation of county plans in Estonia.

Materials and methods

The study was carried out in Jogeva County which is located in the middle of the Eastern Estonia. According to Statistics Estonia (http://www.stat.ee/ppe-jogeva-maakond), the area of the county is 2603.83 km² and the population is 30,671, and based on those characteristics it is the ninth biggest county in Estonia (by date 09.12.2013). The main sphere of economic activity in Jogeva County is agriculture.

The determination of valuable agricultural land was limited to arable land only, grassland was not included. The valuation procedures were carried out in the ArcGIS environment and the following digital maps were used for that purpose:

- Estonian National Topographic Database;
- map of land reclamation systems;
- soil map of Estonia.

The procedure of determination of valuable arable land in the frames of preparation of county plans generally consists of two parts. In the first, a complex evaluation of arable land plots has to be made. Complex evaluation means the calculation of a single index for each plot of land. That index (CVI – complex value index in further) includes the impact of different factors that makes land valuable for farming. The second step is the determination of limits of valuable arable land areas by simulating different situations. Different approaches and criteria can be implemented in the simulation process. The valuation procedures consisted of the following steps:

- formation of study units to be evaluated;
- preliminary evaluation of each study unit by different factors (criteria);
- recalculation of results of preliminary evaluation;
- calculation of final grade of comparable value (CVI) for each study unit.

The first task was the formation of study units as undivided and complete pieces of arable land. The study units are the areas of arable land that are delimited by other types of land (e.g. forest), by roads, ditches, or other linear objects. Different overlay procedures in the ArcGIS environment were implemented in order to determine the study units. Depending on local circumstances some study units were less than one hectare, while the largest study unit was 303 hectares. Study units with the areas less than one hectare were excluded from the study. The reason for doing that was the fact that small pieces of arable land are usually a part of small landholdings and such areas do not play important roles in contemporary agriculture. The study units are the main elements of all the following procedures. All data were connected to study units including the CVI.

Once the study units were determined, the next task was to evaluate them from the perspective of agriculture production. The list of factors to be considered for calculating the CVI was created and presented to farmers to evaluate how the factors influence the value of arable land and the CVI. The farmers were asked because they know the local conditions and the impact of different factors on the value of land from an agriculture perspective.

Finally, the seven following factors were used in the study for calculation of the CVI:

- soil fertility is an important factor for every type of agriculture production and it was measured through site classes of soils that are available on digital soil maps. The weighted average of site classes was calculated for each study unit, while soils types and site classes varied within study units. The site class varies between 15 and 64;
- area of a plot (area of study unit in this case) is another factor that affects profit in agriculture production. The importance of this factor is growing due to the developments of cultivation technology; it is difficult to cultivate small plots with big machinery;
- shape (compactness) of a parcel has also an impact on land cultivation conditions. The tillage of a non-compact plot will raise cultivation costs. A square is considered as an ideal shape and every other shape as imperfect in the authors' study. Compactness was measured with a compactness coefficient and for squares it equals one. However, compactness coefficient can be less than one in case the plot is similar to circle. The compactness coefficient increases with the decrease of the compactness of a plot. The calculation of coefficients has been made in GIS environment. The compactness coefficient of study units varied between 0.943 and 6.403;
- accessibility conditions to land affect agricultural production – good accessibility contributes to active land use and poor access conditions can lead to land abandonment (Mandel, M. and Maasikamäe, S., 2013). In this study, accessibility was measured as the distance from the state road network to study units, and it varied between 0 metres and 3890 metres;
- the nearness of plots is understood as the distance from each study unit to the nearest neighbouring study unit. The nearness of plots does not directly affect cultivation costs but are raised by extra expenditures made to access separately located parcels. Therefore, the distance to the nearest neighbour was determined for all study units;
- distance from bigger centres and nearest settlements does not directly affect agriculture production but often centres around aggregate production centres, services and markets. Study units that are located farther from these types of features will have to spend extra costs, also sometimes in the periphery, these kinds of plots can be left out of use. The distance from the nearest bigger settlement (village, small town) to all study units was determined. The limit to being a big settlement was set to at least 100 inhabitants. The total number of settlements in Jogeva County is 239 and 50 of them met the mentioned criterion;
- amelioration is important in those areas where soil fertility is low or humidity is high. This factor was evaluated for all study units as the ratio of the area under amelioration systems and the area of a study unit itself.

The factors listed above are measured in different units and different scales, and thus, they are not comparable. In order to transform the factors into a comparable scale, they should be normalised. Normalisation in this study refers to the procedure where all data of all factors were transformed into a scale from 0 to 1. A particular factor was assigned for the best value; the new value 1 and for worst value was assigned respectively the new value 0, e.g. the study unit with the highest site class of soil was graded with 1 and with the lowest site class of soil was graded with 0, the most compact study unit was graded with 1 and the less compact with 0 etc.

It is still difficult to compare the impacts of different factors after normalisation. The reason is that each factor might have a different impact on the CVI of arable land. Therefore, the factors must have different weights when the CVI is calculated and equation 1 was used for that purpose.

$$CVI_i = \frac{\sum f_i w_i}{\sum w_i}, \quad (1)$$

where

CVI_i - the complex value index for the i-th study unit;

f_i - the rate of the i-th factor;

w_i - s the weight of the i-th factor.

Weights of factors were also determined when the farmers were questioned. The respondents were asked to evaluate impact of each factor on a 5-point scale from the perspective of valuable agriculture land. After data processing the weights for each factor were calculated and the results are presented in Table 1.

Table 1

Weights of factors for calculation the CVI for Jogeva County

Factor	Weight of a factor
Soil fertility	0.1971
Amelioration	0.1606
Area of a parcel	0.1460
Accessibility conditions	0.1460
Shape of a parcel	0.1314
Nearness of parcels	0.1314
Distance from bigger centres and nearest settlements	0.0876
Sum of all weights	1.0000

Source: authors' calculations based on the authors' study

If the parameters are normalised and the sum of weights is transformed to 1 then the CVI can theoretically range from 0 to 1. In practice the range of CVI can be and is less. In our study the calculated CVI for all study units varied between 0.291 and 0.878. The two options to continue are possible. The first is to leave the calculated CVI values as they are. The second option is to normalise the

CVI values by converting them into a range from 0 to 1. The authors used the second option in the present study.

Research results and discussion

As a result of the present study, the authors got the digital map of arable land plots (study units) for Jogeva County in ArcGIS shape format. All study units have the descriptions of different components of the complex value and the CVI. The calculated CVI is meant to help the planners in the decision-making process when the areas of valuable land are needed to be determined. There are two basic approaches to use the CVI for that purposes. The first option is to set a certain threshold for CVI and all land that has higher complex ratings will be considered as valuable land. The second option is to arrange all study units by the CVI and then find the certain area (or percentage) of the most valuable arable land.

The use of the first option for the determination of valuable land is described first. It is necessary to mention that some particular components (e.g. soil site class) of the complex ratings can also be used besides the CVI. The area of valuable land will be changed depending on the setting of the threshold. Table 2 illustrates these changes.

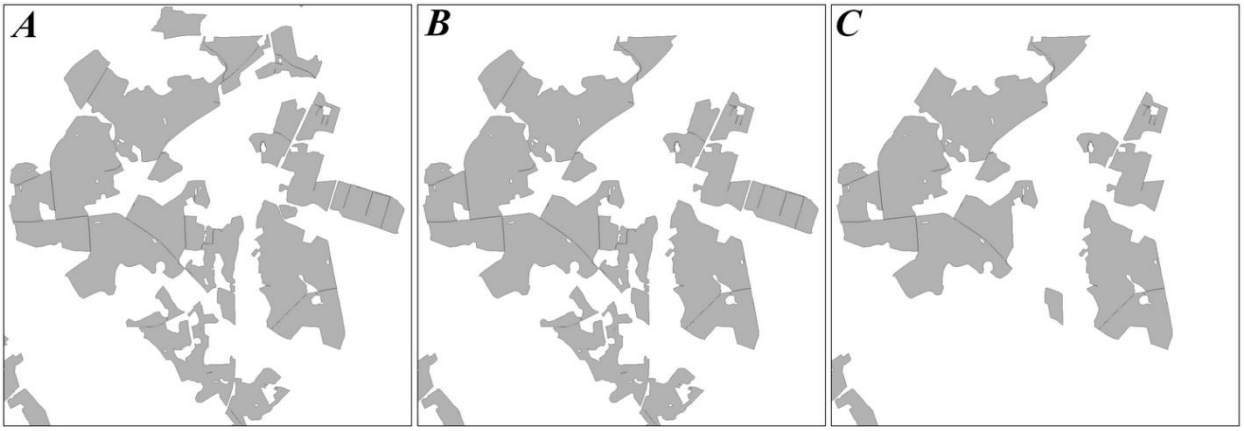
Table 2

Areas and percentages of valuable arable land for different thresholds calculated by normalised complex value indexes (CVI) and normalised site classes of soil for Jogeva County

Value of thresholds	Normalised CVI		Normalised site class of soil	
	Area of arable land considered as valuable (ha)	Percentage of valuable arable land from total area of arable land	Area of arable land considered as valuable (ha)	Percentage of valuable arable land from total area of arable land
0.3	77745	99.1	76402	97.4
0.4	76460	97.5	74084	94.4
0.5	72394	92.3	69741	88.9
0.6	62003	79.0	57603	73.4
0.7	45539	58.0	37116	47.3
0.8	22770	29.0	13473	17.2

Source: authors' calculations based on the authors' study

Data in Table 2 clearly indicate that most land will be determined as valuable if the threshold is set to 0.3. It is not reasonable to set threshold less than 0.3 because in those cases almost all agricultural land will be determined as valuable. The total area of arable land included in the study was 78,395 hectares. The area of valuable land will decrease if the threshold is set higher. However, the areas of valuable land will be different if some component of value is used instead of the CVI (soil site class in this particular case). That difference became bigger if the threshold was set higher. The data of Table 2 show that soil site class cannot be used instead of the CVI when the areas of valuable agricultural land are determined. Depending on the threshold the corresponding map can be produced immediately as all calculations are made in a GIS environment.



Source: authors' construction based on the calculations in GIS environment

Fig. 1. **The examples of valuable arable land determined by different thresholds, fragments of valuable arable land map. The threshold for CVI is set to 0.5 in section A of the figure and to 0.6 and 0.7 in sections B and C, respectively**

Figure 1 presents the fragment of three different maps of the same area. The difference among sections of the figure is that the different thresholds have been set for the CVI as criteria of valuable arable land.

The setting of the correct threshold for determination of valuable arable land is not the issue of valuation of the study units. It is rather the land policy issue. The criterion should be set by policymakers and planners. On the contrary, the use of different thresholds for the CVI gives the flexible possibility to simulate different situations of valuable arable land. It is possible to find answers to questions like: What … if …? The starting point of the second approach is setting the area (or percentage) of arable land that should be considered as valuable. It can be settled that the particular area in hectares or percentage of agricultural land should be considered as valuable. Table 3 gives an overview on the CVI and soil site class values if a particular percentage of land is decided to be considered as valuable.

Table 3

The complex value indexes (CVI) and soil site classes for different ratios of arable land as valuable land for Jogeva County

Percentage of valuable land as threshold	Threshold	
	Complex value index	Soil site class
10	0.864	57.8
20	0.828	55.6
30	0.797	54.0
40	0.765	53.1
50	0.734	51.8
60	0.692	50.5
70	0.646	49.0
80	0.593	47.2
90	0.523	43.6

Source: authors' calculations based on the authors' study

The figures of Table 3 are needed for generation of different maps of valuable arable land if the percentage of valuable land as a threshold has been settled. If it is decided, for example, that 50% of the best arable land should be valuable then the CVI should be set to 0.734 if a map of valuable arable land

for Jõgeva County has to be generated. The data of Table 3 allow easy generation of different maps of valuable arable land. The planner can quickly simulate different situations of valuable arable land if information like in Table 3 is provided.

The hypothesis of the study was that the determination of valuable agricultural land on the basis of soil site class and complex of factors will give different results. Data from Tables 2 and 3 are proving this hypothesis. The soil site class does not consider influence of factors that are important from the land use perspective. The implementation of CVI will eliminate this disadvantage. The methodology for determination of valuable agricultural land must be simple and general enough. It is not oriented to plan the agricultural activities in the short run, e.g. from five to ten years. The advantage of the presented methodology is also the fact that different factors with different scales and different units were combined into a single index. A problematic issue can be the determination of weights for different factors. The opinions of farmers are a good source of information but it is obviously based on local knowledge and experience. The local conditions of different counties are different. The flat areas of the Northern Estonia are not comparable with the hilly areas of the Southern Estonia. It means, for example, that the relief as one of the factors should be considered if the CVI is calculated in some regions and not considered in others. The weights for different factors, when calculating the CVI, can vary depending on the region.

The results of the present study will be used in compilation of the Jogeva County plan that was initiated among other county plans by the Estonian government. The results show that some elaboration of methodology for determination of valuable agricultural land can be needed but the basic principles are settled and can be implemented.

Conclusions

The proposed method for determination of valuable agricultural land is simple, robust, and easy to use. The necessary initial data are mostly available. The only drawback is the incomplete data about soil productivity for some areas of agricultural land. However, the problem can be solved as the database of soil maps contains the necessary initial data for the determination of soil productivity.

1. The proposed methodology gives planners flexible tools for simulation of different situations of valuable agricultural land.
2. There were (and still are) some problems with the input data. Soil productivity data are missing for some agricultural land parcels.
3. The weights of different factors need more careful investigations. However, the results show that the most important factors to be considered when determining valuable agricultural land are the productivity of soils, the presence of amelioration systems, areas of parcels, and accessibility conditions.

Bibliography

1. Alexandratos, N., Bruinsma, J. (2012). *World Agriculture towards 2030/2050: The 2012 Revision*. ESA Working Paper No. 12-03. Rome, FAO.
2. Bruinsma, J. (2011). The Resources Outlook: by How Much Do Land, Water and Crop Yields Need to Increase by 2050? *In: Looking Ahead in World Food and Agriculture: Perspectives to 2050, Edited by Piero Conforti, Food and Agriculture Organization of the United Nations*, pp. 233-278.

3. FAO. (2002). *World Agriculture: Towards 2015/2030. Summary Report*. Food and Agriculture Organization of the United Nations, Rome, p. 97.

4. FAO. (2009). *Global Agriculture Towards 2050. High-level Expert Forum*, Rome 12-13 October 2009. Retrieved: http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_ papers/HLEF2050_Global_Agriculture.pdf. Access: 16.12.2013.

5. Kerselaers, E., Rogge, E., Vanempten, E., Lauwers, L., Van Huylenbroeck, G. (2013). Changing Land Use in the Countryside: Stakeholders' Perception of the Ongoing Rural Planning Processes in Flanders. *Land Use Policy* Volume 32, pp. 197-206.

6. Linner, H., Messing, I. (2012). Agricultural Land Needs Protection, *Acta Agriculturae Scandinavica, Section B - Soil & Plant Science*, Volume 62, Issue 8, pp. 706-710.

7. Lähteseisukohad Maakonnaplaneeringute Koostamiseks (2013). (Basic Standpoints for the Preparation County Plans. Annex to Estonian Government Order NO 337) Retrieved: https://www.siseministeerium.ee/public/LSK_MKP_koostamiseks_2013.pdf. Access: 26.11.2013.

8. Maakonnaplaneeringute Algatamine (2013). (Origination the Preparation County Plans. Estonian Government Order NO 337, passed 18.07.2013) Retrieved: https://www.riigiteataja.ee/ akt/323072013006.pdf. Access: 16.12.2013.

9. Maasikamäe, S., Hass, H., Jürgenson, E. (2011). The Impact of Uncontrolled Development on the Use of Arable Land. *Proceedings: The Fifth International Scientific Conference Rural Development 2011, 24-25 November, 2011, Akademija,* Volume 5, Book 2, pp. 446-451.

10. Mandel, M., Maasikamäe, S. (2013). Correlation between Conversion of Arable Land into Brushwood and Distance of Plots from Roads. *Proceedings: The Sixth International Scientific Conference Rural Development 2013, 28–29 November, 2013, Akademija*, Volume 6, Book 3, pp. 343-348.

11. Planning Act (2002). Retrieved: http://www.legaltext.ee/et/andmebaas/tekst.asp?loc=text&dok=X70006K3&keel=en&pg=1&ptyyp=RT&tyyp=X&query=Planeerimis. Access: 17.12.2013.

12. Statistics Estonia. (2013). Jogeva Maakond. Retrieved: http://www.stat.ee/ppe-jogeva-maakond. Access: 16.12.2013.

13. Veeroja, P., Heil, E., Maltis, M., Maasikamäe, S. (2013). Impact of Discrete New Real Estate Developments on the Spatial Properties of Arable Land. *Proceedings: The Sixth International Scientific Conference Rural Development 2013, 28–29 November, 2013, Akademija,* Volume 6, Book 3, pp. 501-506.

14. United Nations (UN) (2013). World Population Prospects. The 2012 Revision: Key Findings and Advance Tables. Retrieved: http://esa.un.org/wpp/Documentation/pdf/ WPP2012_%20 KEY%20FINDINGS.pdf. Access: 17.12.2013.

15. World Bank (2013). Arable Land (hectares per person). Retrieved: http://data.worldbank.org/indicator/AG.LND.ARBL.HA.PC. Access: 16.12.2013.

INTEGRATION OF YOUNG PEOPLE INTO THE LABOUR MARKET THROUGH PARTICIPATION IN BUSINESS SUPPORT PROGRAMMES

Liva Grinevica[1], PhD student;
Baiba Rivza, Dr.habil.oec., professor
Latvia University of Agriculture

Abstract. Between 2008 and 2012, the rate of long-term unemployment in the European countries increased most significantly for young people without education and work experience. The states' economic policies should aim to improve the employability of young people to reduce further youth unemployment. This implies further adjustment to the labour market institutions such as employment protection legislation and insufficiently flexible working time arrangements, which may constitute a barrier to young persons' employment opportunities.

The aim of this research is to determine the possibility of young people of Latvia to develop entrepreneurship and to provide a job for themselves in the context of the relationship between business support programmes and long-term unemployment. The paper emphasises the importance of business support programmes' flexibility as a combat to youth long-term unemployment. The paper is based on the analysis of theoretical assumptions made by various authors and opinions of young people on possibilities to be self-employed. Therefore, it is significant to determine solutions for the problem – how to start a new business and to get financial support.

Key words: youth long-term unemployment, business support programmes, self-employment.
JEL code: J01, J64

Introduction

The aim of this research is to determine the possibility of young people of Latvia to develop entrepreneurship and to provide a job for themselves in the context of the relationship between business support programmes and long-term unemployment. The paper brings closer the youth interest in entrepreneurship and self-employment development through their participation in business support programmes. The paper is based on empirical studies of young people in Jelgava, Latvia.

Hypothesis of the research. More effective young people's integration into the labour market has to be achieved through business development which will increase the competitiveness of Latvia's economy.

Tasks of the research:

1) to summarise the theoretical and scientific viewpoints and the findings of scientists on youth long-term unemployment;
2) to determine the role of business support programmes for young people as a possibility to start entrepreneurship or to be self-employed;

[1]Corresponding author. Tel.: + +371 28244527
E-mail address: grinevica.liva@yahoo.com

3) to get information from students of their standpoint of entrepreneurship;

4) to work out recommendations.

The research **is based on the survey results** obtained by surveying the students (N=67) of Latvia University of Agriculture and **statistical data** of the Central Statistical Bureau of Latvia.

Methodology of the research.

The methods of analysis and synthesis, statistical data calculations as well as scientific discussion were applied for fulfilment of the above assignments. The strategic planning documents of Latvia, scientific publications as well as statistical data were used to achieve the aim and fulfil the tasks. The statistical calculations were made by using the statistical program SPSS (Statistical Package for the Social Sciences).

Differences in theoretical and empirical youth long-term unemployment definitions have been studied since the 1970s by such researchers as Elhorst P., Clark K. B., Summers L. H., Bell N. F. D., Blanchflower G. D., and others. However, only a few of them analyse and determine solutions for struggling with the youth long-term unemployment problems in a long-term period.

In many European countries, the rising incidence of youth unemployment has been a major social problem since the 1970s. Many young people enter into unemployment spells after leaving education, thus, increasing their risk to find themselves unemployed years later and to face periods of social instability during their early careers.

Unemployment while young can lead to long-term reductions in wages, increases chances of subsequent periods of unemployment, and poorer health outcomes. High levels of youth unemployment also have wider social and economic costs (Lee N. et al., 2012).

Among the long-term unemployed (for more than 12 months), there is a group for whom the consequences of youth unemployment are most acute. These young people are exposed to scarring effects caused by youth unemployment that have later impact on their wages, employment, and health. The longer people are out of work while young, the more severe the effects can be. This makes addressing the problems of this group an important challenge for states' policymakers.

Unemployment and the unemployment rate are strongly connected with labour market participation. This applies, in particular, to young people below 25 years of age, a significant proportion of whom have not yet entered the labour market. The entry patterns characterising school-to-work transitions and the average age at which specific types of school-to-work transition are observed depend on qualifications and national systems of general and/or vocational education and training (Dietrich H., 2003).

According to Dietrich (2003), taking labour market participation into account, the extent and dynamics of youth unemployment have changed across the European countries over time. Concerning young people below 25 years of age, both the share of unemployed young people and the variance between European countries have narrowed (Dietrich H., 2003).

The authors Gomez-Salvador and Leiner- Killinger consider that youth unemployment has several features that are country-specific; each country must identify the relevant underlying sources of youth unemployment and react accordingly. The preceding analysis indicates that governments can make a decisive contribution to supporting a smooth transition of young persons from education to the labour

market by providing a well-functioning education system and labour market institutions that do not introduce distortions into the labour market (Gomez-Salvador R. et al., 2008).

The occurrence of high proportion of long-term unemployed is an evidence of profound dysfunction in a local labour market area. Indeed, studies on unemployment differentials that take into account the regional perspective and use simultaneous modelling are based on the hypothesis that regional unemployment both affects and is affected by regional factors of labour supply, labour demand and wages (Elhorst P., 2003). The authors completely agree with this statement because employment is significantly affected by regional differences at both national and international levels.

Research results and discussion

1. Youth long-term unemployment

Unemployment while young, especially of long duration, causes permanent scars rather than temporary blemishes. For the young, a spell of unemployment does not end with that spell; it raises the probability of being unemployed in later years and has a wage penalty. These effects are much larger than for older people.

According to Bell and Blanchflower, the youth unemployment is one of the most pressing economic and social problems confronting those countries whose labour markets have weakened substantially since 2008, following the near-collapse of worldwide financial markets. There is an element of "Deja vu" around this development: youth unemployment first became a serious problem for industrialised countries during the 1980s. While labour markets were booming in the early part of this century, youth unemployment was still a concern. However, the particularly rapid increase in youth unemployment during the current recession has once again sharpened the policy focus on this issue (Bell N.F.D. et al., 2009).

The researcher Ellwood (1982) examined the persistence and long-term impacts of early labour force experiences. He reports a rise in employment rates for a cohort of young men as they age but points out that those persons with poor employment records early have comparatively poor records later. The paper found that the effects of a period without work didnot end with that spell. A teenager who spends time out of work in one year will probably spend less time working in the next year than he would have had he worked the entire year. Furthermore, Ellwood concluded that the lost work experience was reflected in considerably lower wages. The reduced employment effects Ellwood examined appeared to die off very quickly. What appeared to persist were effects of lost work experience on wages (Ellwood D., 1982).

In addition to education, other relevant factors for determining the probability of entering or exiting from unemployment are related with the individual's labour market biography. Individuals with more experience are more attractive to employers, as they can potentially invest less in their training.

The relationship between education and unemployment is explained partly by the signalling and screening theories. These studies suggest that employers hire workers based on imperfect information about their real productivity levels transmitted through their educational data, used as a filtering mechanism and a proxy for performance (Garrouste C. et al., 2010).

Young people have difficulties in entering the labour market, while older people are more likely to remain unemployed after losing their job. Especially for low-educated youth, failure to find a first job can

have negative long-term consequences on their career prospects. The young tend to experience particularly high rates of unemployment during recessions since it is most difficult to enter the labour market at that time (Markso U. et al., 2011).

Clark and Summers (1982), in their classic study of the dynamics of youth joblessness, argue that the problem of teenage unemployment arises from a shortage of jobs. The aggregate demand has a potent impact on the job prospects and market experience of teenagers (Clark K. B. et al., 1982).

According to Latvia's National Development Plan 2014-2020, an outstanding business environment includes a coherent regulatory framework, the operation of a stable state support and monitoring system, public services oriented towards the needs of businesses, clear and competitive environment for the start-up and development of business activity so that anyone willing to do so could establish a business, work and live in Latvia. An outstanding business environment promotes the development of businesses, attracts new companies and investments, and involves the population as workforce and new employers. A clear and comprehensible business environment serves as a guarantee of fairly earned pay for every person and revenue for the state (National Development Plan…, 2012).

The National Development Plan 2014-2020 has not provided any detailed information on entrepreneurship development for the priority target group - young people. Although, the National Development Plan 2007-2013 provided more detailed information on entrepreneurship development and defined its main tasks and priorities, yet, there was more information of export development for the existing medium and small enterprises but not for new enterprises and self-employed people.

The authors have determined the main tasks for entrepreneurship development according to Latvia's strategic planning documents:

- to encourage young people to be entrepreneurs and set up their own business, thereby, increasing the prestige and reputation of entrepreneurship as well as implementing a business set-up motivation programme, training and consultations;
- to ensure unified and effective support in setting up a business (mentor's consultations, business incubators in all the regions of Latvia, business support programmes of banks (for example, the Latvian Development Finance Institution Altum (ALTUM) which is responsible for micro-credit and start-up programmes for business support);
- to increase the availability of financial resources (starting capital, loans, funding, grants, business angels etc.);
- to particularly encourage the creation of companies, including new innovative companies in traditional sectors, in the regions of Latvia.

In all European countries, one of the main tasks and priorities for the government is to involve young people into the labour market and to make a competitive business environment for them.

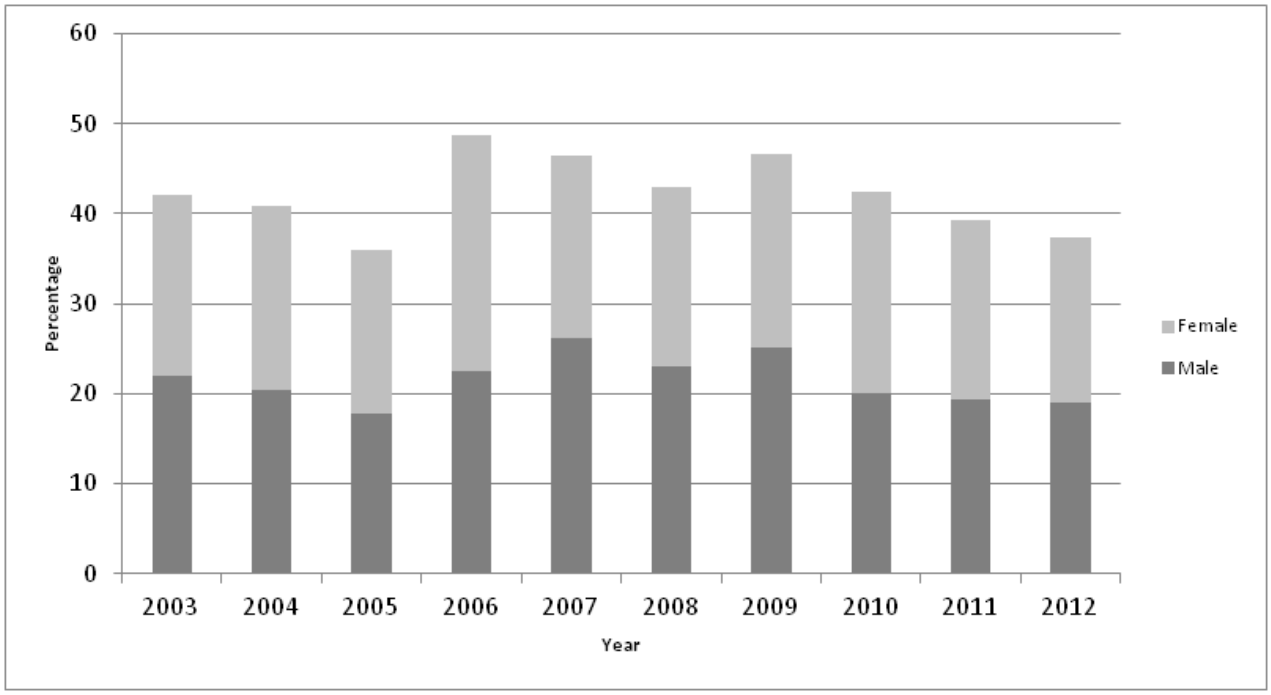
2. Entrepreneurship and self-employment of youth

According to the European Parliament, the youth unemployment reached unsustainable levels in March 2013. The unemployment rate of European youth stood at 22.8%, while in some Member States the figure was over 50%. The measures such as the youth unemployment package and the youth employment initiative would help to remedy the situation. Encouraging entrepreneurship and youth self-

employment should be a key element in tackling youth unemployment. The main incentives and possibilities to struggle with the long-term unemployment problem is to develop and support entrepreneurship and self-employment through different business measures, programmes and projects, for example, exchange of experience, support from entrepreneurs, funding from banks, entrepreneurs etc. (Communication from the…, 2013).

The main problem of Latvia is that it is hard to get funding for starting a new business if the person does not have a property and cannot give any collateral. Will Latvia propose new initiatives that are aimed improving the employment situation for younger people?

To obtain information on young people and their interest in entrepreneurship and in the possibility to be self-employed, the authors conducted a survey of 67 young people in Jelgava, Latvia. In the survey, some of the respondents were only students and did not think of finding a job. The authors also analysed the tendencies of labour market to assess the characteristics of the age group from 15 to 24.



Source: statistical data of the Central Statistical Bureau of Latvia, 2012

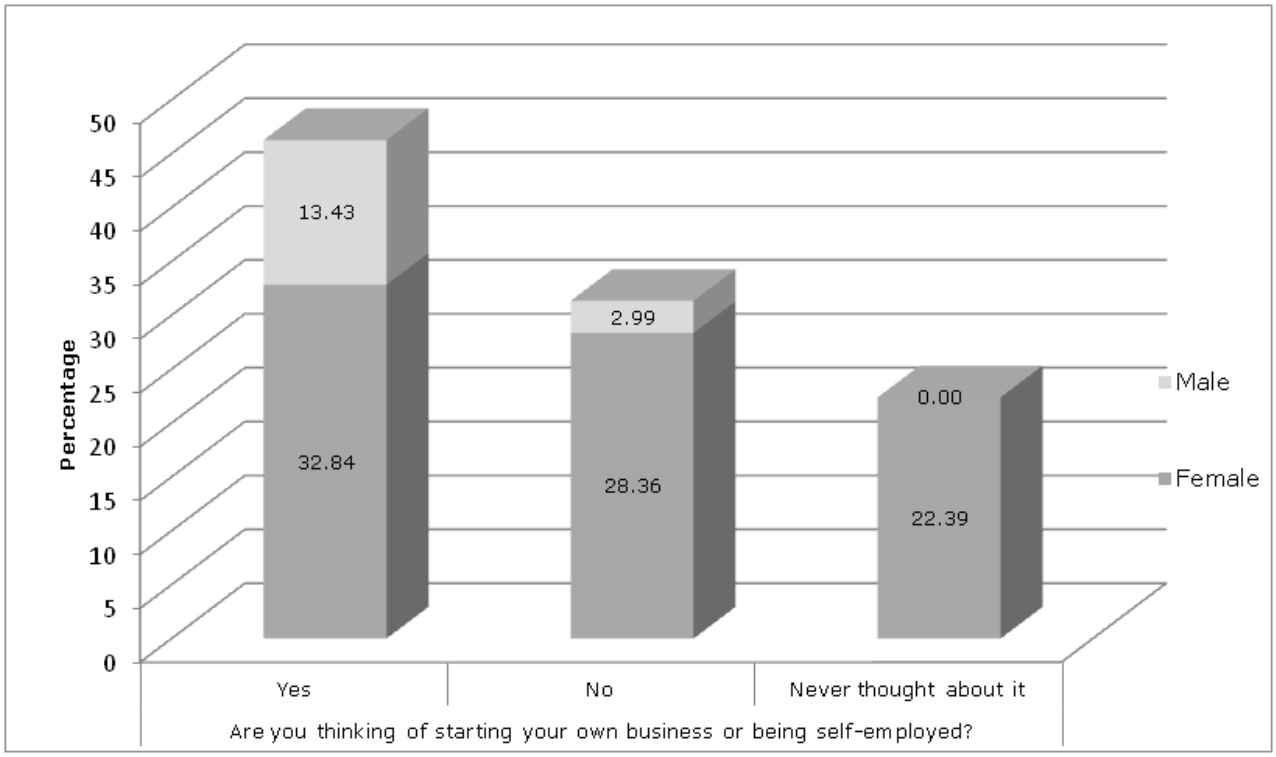
Fig. 1. **Unemployed young people (age group 15-24) in Latvia from 2003 to 2012, %**

According to the figure, one can observe that unemployment increased equally among young men and women up to 2006 and started to decrease thereafter within men having higher unemployment rates than women from 2007 to 2009. That situation changed in 2010 when unemployment for young women was higher than for men. The authors consider that it is explicable by the possibility to be self-employed in the construction industry (Figure 1).

According to the results of the survey (N=67), 74% of the young people were only students, some of them were thinking of starting a business or being self-employed after finishing their studies;

24% of the individuals were students and the employed, and only 2% were not students and were unemployed for some months.

According to the information from students of the survey, 57% of the unemployed students were without work only for 1 to 3 months, it might be explained by the fact that some of them were working part time jobs or illegal works for some days, for example, in summers and during the free time from studies.

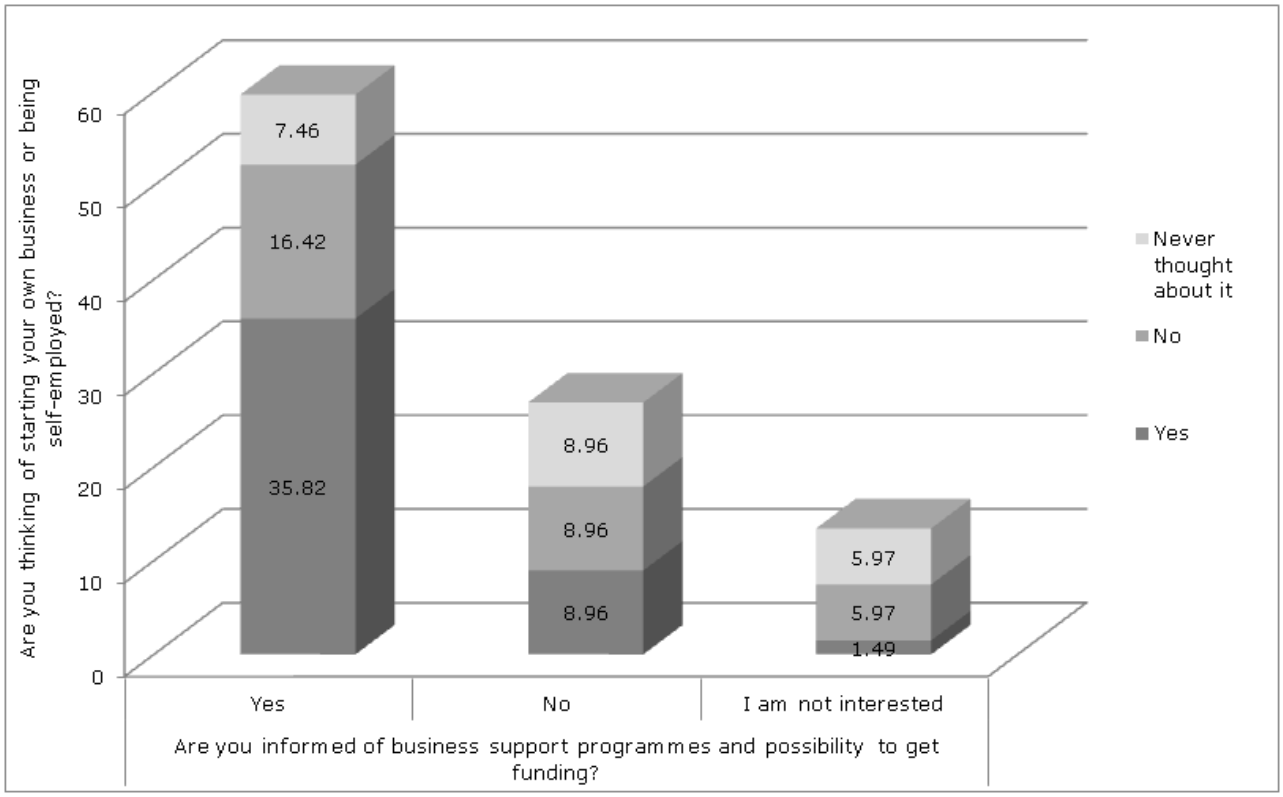


Source: authors' survey results

Fig. 2. **Correlation between gender and answers to the question "Are you thinking of starting your own business or being self-employed?", %**

Figure 3 shows the students' answers to the questions. In the survey, 35.82% of all the respondents answered positively, they were ready to start business and were informed of the business support programmes. The answers revealed that 16.42% of the respondents were informed of business support programmes but were not thinking of starting their own business; whereas, 7.46% were informed of business support programmes but were not interested in starting business and had never thought about it. Of the respondents, 8.96% were not informed of business support programmes and were not thinking of starting business, the same percentage of individuals answered that they were not informed of business support programmes and did not want to start own business.

According to the research of the Ministry of Education and Science of Latvia (2013), 52% of young people had negatively evaluated the possibility to start business and 44% of them thought that they did not have sufficient possibility to participate in such international projects where it would be possible to get professional experience.



Source: authors' survey results

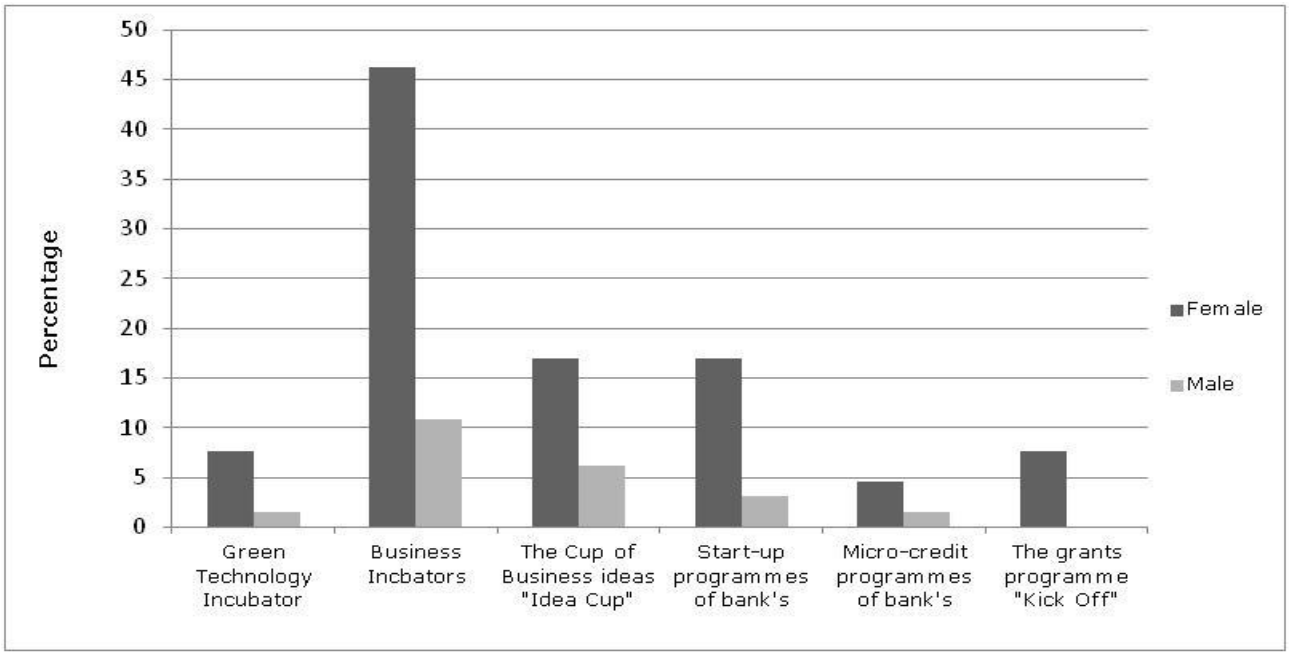
Fig. 3. **Correlation between students' answers to the questions of the idea of own business and of knowledge of business support programmes and possibilities to get funding, %**

According to the results of the survey, 60% of the individuals were informed of business support programmes in banks of Latvia, the Investment and Development Agency of Latvia and municipalities. Yet, 27% of the respondents were not informed about the kinds of the programmes and 13% were not interested in these programmes. Such results cannot be evaluated positively and progressively because the main property for all individuals is knowledge and experience, and it is important to be informed of all economic activities in the individual's area.

According to the results of the survey, the Business Incubator is one of the business start-up programmes that is recognised and well known for younger people. This type of possibility is very well known in Jelgava, Latvia, because there are located business incubators where entrepreneurs can receive support with getting a place for office, support with recordkeeping, accounting, and business contacts.

In addition, a very popular support programme with a relatively small funding for some of the students is the cup of business ideas or "Idea Cup" where students can present their own ideas and get a start-up funding; however there is a high competition for it. It is surprising that students and young people are not interested in business support possibilities from banks.

The authors consider that it is related with the world's economic crisis before which a large number of the employed got loans from banks and made debts. It is understandable that students and other young people do not want to take up excess debts, because some of them also need to pay for their studies and for their accommodation (Figure 3).



Source: authors' survey results

Fig. 4. **Answers to the question "Which of the start- up programmes do you know and are aware of?" by gender, %**

The author Lewin-Waldman notes that in many countries, active labour market programmes focus on particular sets of barriers to employment like lack of motivation, lack of job search skills, and lack of marketable skills. Many of these programmes have been shown to be ineffective in reaching their intended goals. The main reason for their ineffectiveness may simply be inefficient matches of job seekers to available programmes. Available programmes may not meet the needs of the unemployed. Therefore, it is significant to provide all the needs of a potential entrepreneur to make comparative advantage and higher possibility to get start-up funding without so unfeasible conditions (Levin-Waldman O. M., 2012).

Currently, solving youth unemployment is the most pressing problem governments are facing today. The neglecting of the dealing with the problem of high and rising levels of youth unemployment hurts not only youngsters but also causes potentially severe consequences for economic stability. Young people must be the priority of municipalities and business support agencies.

Proposals

The authors have made the following proposals to achieve the aim.

1. To bring more young people into entrepreneurship and self-employment programmes with same responsiveness conditions as older people.
2. To focus on the growth and development of the state's business environment by additional supporting programmes, projects and courses for young potential entrepreneurs in all sectors of economy.
3. To develop effective support in setting up a start-up business with a higher possibility to get a mentor's consultations, financial and technical support from business angels, a higher

possibility to get financial grants from business support agencies such as the Investment and Development Agency of Latvia, the Rural Support Service etc.

4. To promote higher information exchange between students and entrepreneurs from different countries, providing a possibility to work in foreign companies and getting experience and new business contacts for the future growth. That type of advantage would be required for a different kind of industries and level of education.
5. To improve the system of education and the programmes of the State Employment Agency by more effective future investment in young people's education, because nowadays its efficiency is not so high.

Bibliography

1. Bell, N. F. D., Blanchflower, G. D. (2009). Youth Unemployment: Deja vu? Division of Economics, *Stirlong Management School, University of Stirling and IZA,* pp. 1-55.
2. Clark, K. B., Summers, L. H. (1982). The Youth Labour Market Problem: Its Nature, Causes, and Consequences. *University of Chicago Press and NBER.* pp. 1-16.
3. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions (2013). Youth employment Initiative. *European Commission.* Strasbourg. pp. 1-4.
4. Darba mekletaji sadalijuma pa vecuma grupam un dzimuma (*Distribution of Job Seekers by Age Group and Gender*). Retrieved: http://data.csb.gov.lv/Dialog/varval.asp?ma=NB0250&ti=NBG25%2E+DARBA+MEKL%C7T%C2JI+SADAL%CEJUM%C2+PA+VECUMA+GRUP%C2M+UN+DZIMUMA&path=../DATABASE/Iedzsoc/Ikgad%E7jie%20statistikas%20dati/Nodarbin%E2t%EEba/&lang=16], Access: 10.01.2014.
5. Dietrich, H. (2012). Youth Unemployment in Europe. Theoretical Considerations and Empirical Findings. *Friedrich Ebert Stiftung,* pp. 1-42.
6. Elhorst, P. (2003). The Mystery of Regional Unemployment Differentials: A Survey of Theoretical and Empirical Explanations. *Journal of Economics Surveys,* No. 17, Issue. 5, pp. 709-748.
7. Ellwood, D. (1982). Teenage Unemployment: Permanent Scarsor Temporary Blemishes? *The Youth Labour Market Problem: Its Nature, Causes and Consequences*. *Chicago: University of Chicago Press,* pp. 349-390.
8. Garrouste, C., Kozovska, K., Perez, E. A. (2010). Education and Long-Term Unemployment. *JRC Scientific and Technical reports,* pp. 4-29.
9. Gomez-Salvador, R., Leiner-Kilinyer, N. (2008). An Analysis of Youth Unemployment in the Euro Area. *European Central Bank,* Eurosystem, Occasional Paper Series, No 89, pp. 1-45.
10. Latvian Development Plan 2007- 2013. *Ministry of Regional Development and Local Government of the Republic of Latvia.* Jelgavas tipografija Ltd. 2006, pp. 1-56.
11. Lee, N., Sissons, P., Balarm, B., Jones, K., Cominetti, N. (2012). Short-term Crisis – long-term Problem? Addressing the Youth employment challenge. *The Work Foundation, Part of Lanchester University,* pp. 1-50.
12. Levin-Waldman, O. M. (2012). The Changing Contours of Long-Term Unemployment. The Need for a More Radical Policy. *Employment Policy Research Network,* the State University of New Jersey, pp. 1-45.
13. Markso, U., Tammaru, T. (2011). Long-term Unemployment in Economic Boom and Bust: The case of Estonia. Estonia: *University of Tartu,* Vol. 15 (65/60)3, pp. 215-234.
14. National Development Plan of Latvia for 2014-2020. *Cross-Sectoral Coordination Centre.* Retrieved*:* http://www.nap.lv/images/NAP2020%20dokumenti/NDP2020_English_Final.pdf. Access: 04.04.2013.

ZERO UNITARISATION METHOD AS A TOOL IN RANKING RESEARCH

Karol Kukula[1], professor
Faculty of Statistics, Agricultural University in Cracow

Abstract. The paper presents one of the methods used for standardisation of diagnostic variables – Zero Unitarisation Method. All the properties of the method that are significant for the researcher have been discussed in the paper. Many advantages of Zero Unitarisation Method applied in the context of ranking construction indicate that it is one of the most adequate tools that could help in setting linear order in sets of objects such as countries, voivodships, states, counties, districts, communes, and similar. Apart from ranking construction on the basis of diagnostic variables standardised by ZUM, the paper also shows the way of division of set of objects into three subsets: Group I – of high level of complex phenomenon, Group II – of moderate level of complex phenomenon, and Group III – of low level of complex phenomenon.

Key words: Zero Unitarisation Method, diagnostic variables, standardisation methods.
JEL code: Q19

Introduction

In the world that surrounds us, there are plenty of phenomena that can be described as complex. All kinds of comparisons among spatial objects such as countries, voivodships, states, counties, districts, communes, and similar with respect to the level of a given complex phenomenon are directed towards the construction of their rankings that is putting them in linear order with respect to their estimates regarding some chosen complex phenomenon. The ranking present them in the arrangement that begins with the best object and ends with the worst one.

The nature of complex phenomena has its consequence in the fact that they are described by many features which taken jointly create their image. Therefore, the evaluation of objects with respect to the level of the complex phenomenon has a multidimensional character consisting of partitive estimates of particular features that are called diagnostic variables. Due to the fact that these variables are expressed in terms of different units and within different limits of values, the necessity arises to transform them so that they could be compared. The transformed variables have no denominations and take values of similar magnitude. These ways of transforming variables are called the methods of standardisation of diagnostic features. Standardisation of all diagnostic variables in all spatial objects allows for their aggregation, which, in turn, leads to obtainment one total estimate for each object separately. This estimate is called synthetic or aggregate value. Once there is the multicriteria evaluation of each object expressed in the synthetic variable, one can start with the construction of their ranking with respect to the level of the complex phenomenon that is under investigation.

[1] Corresponding author: Tel.: +48 126624377; fax: +48 126624381
E-mail address: ksm@ur.krakow.pl

Regarding all the activities that are needed in order to obtain the estimates of particular objects and construction their ranking, the choice of the method of standardisation of diagnostic variables is the one that demands most attention. One should notice that besides ZUM there are many different methods that can be applied in standardisation of variables. Although application of these methods even in case of one set of diagnostic variables often leads to different results. This fact confirms the importance of the choice of standardisation method in the research.

The issue of the choice of standardisation method is the subject of detailed analysis in the monograph K. Kukula (2000), thus, there is no need to go on with further discussion here.

The paper focuses on problems of investigation of complex phenomena – in particular – methods of their evaluation. The aim of the paper is to present one of the methods of standardisation of diagnostic variables, in particular, zero unitarisation method, and subsequently, the creation of synthetic variable as a basis for the construction of ranking of objects being investigated. The advantages of the standardisation method promoted in the paper will be discussed in this context.

The method discussed in the paper can be applied in particular in all kinds of research concerning rural areas, for example in estimation of level of technical equipment of farms, level of agricultural production, level of socio-economic development of rural areas within the country, and so on.

The paper does not contain any empirical part – the analysis is strictly theoretical. An example of empirical application of the method can be found in the article of J. Szewczyk (2012).

Results and discussion

Information basis and notation

The investigation of the complex phenomena in the paper is conducted in the comparative aspect. This is concerned with close observation of the level of the phenomenon under investigation in case of particular objects.

Let O denotes the set of objects:

$$O = \{O_1, O_2, ..., O_r\} \quad ,$$

where *r* is the number of objects under investigation.

Each of the objects is described by all diagnostic variables proposed a representation of the complex phenomenon. These variables create a set of diagnostic features:

$$X = \{X_1, X_2, ..., X_s\}.$$

where *s* is the number of diagnostic variables used in the description of the complex phenomenon in the objects being investigated.

Let us assume that the research procedure presented here is of static character, which means that it is carried in one chosen period of time (the time variable *t* does not appear in any notation in the paper).

Having chosen the set of diagnostic variables describing the complex phenomenon under investigation, one faces the need to collect all the data, i.e. all values of diagnostic variables in all spatial objects.

This information will constitute the following matrix:

$$X = [x_{ij}] = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1s} \\ x_{21} & x_{22} & \dots & x_{2s} \\ \dots & \dots & \dots & \dots \\ x_{r1} & x_{r2} & \dots & x_{rs} \end{bmatrix}, \quad \begin{pmatrix} i = 1,\dots, r \\ j = 1,\dots, s \end{pmatrix}$$

where x_{ij} denotes realisation of the variable X_j in the object O_i.

Therefore, the object O_i is described by the vector of variables:

$$X_i = [x_{i1}, x_{i2},\dots, x_{is}], (i = 1,\dots, r).$$

The final set of variables obtained as a consequence of the application of the procedure described here allows for any comparative investigation among all objects investigated with respect to the level of the complex phenomenon.

Zero Unitarisation Method

The empirical research usually provides three types of diagnostic variables: stimulants, destimulansts, and nominants which are denoted by *S*, *D,* and *M* respectively. Stimulants (*S*) are the variables that have positive impact complex phenomenon under investigation, which means that the increase of their values is connected with their higher level. On the contrary, destimulants (*D*) are the variables that have negative influence on the complex phenomenon being investigated, and in consequence, their higher values indicate lower level of the complex phenomenon. Finally, nominants (*M*) are the variables that have some optimum value – z_0. For values below the optimum ($x_{ij}<z_0$) they behave as stimulants, while for values above the optimum ($x_{ij}>z_0$) they behave as destimulants.

In the process of standardisation, diagnostic variables are transformed into standardised variables *Z* according to the applied formulas. In case of Zero Unitarisation Method, standardisation of variables that are stimulants is processed according to the following equation:

$$z_{ij} = \frac{x_{ij} - \min\limits_i x_{ij}}{\max\limits_i x_{ij} - \min\limits_i x_{ij}}, \qquad X_j \in S.$$

One should notice that $z_{ij} = 0 \Leftrightarrow x_{ij} = \min\limits_i x_{ij}$ and $z_{ij} = 1 \Leftrightarrow x_{ij} = \max\limits_i x_{ij}$. Therefore, it is obvious that all standardised variables take values from the interval [0; 1].

Diagnostic variables that are destimulants are transformed according to the following equation:

$$z_{ij} = \frac{\max\limits_i x_{ij} - x_{ij}}{\max\limits_i x_{ij} - \min\limits_i x_{ij}}, \qquad X_j \in D.$$

Having applied this equation, one obtains $z_{ij} = 0 \Leftrightarrow x_{ij} = \max\limits_i x_{ij}$ and $z_{ij} = 1 \Leftrightarrow x_{ij} = \min\limits_i x_{ij}$.Also in this case, all the standardised values are from the interval [0; 1].

Diagnostic variables that are nominants are standardised according to the following equation:

$$z_{ij} = \begin{cases} \dfrac{x_{ij} - \min\limits_i x_{ij}}{x_{0j} - \min\limits_i x_{ij}} & , \quad for \quad x_{ij} < x_{0j} \\ 1 \quad , \quad for \quad x_{ij} = x_{0j} \\ \dfrac{\max\limits_i x_{ij} - x_{ij}}{\max\limits_i x_{ij} - x_{0j}} & , \quad for \quad x_{ij} > x_{0j} \end{cases}$$

where x_{0j} is the nominal value of the variable $X_j \in M$.

For the standardised values of the variable X_j, we have $z_{ij} = 0 \Leftrightarrow x_{ij} = \min\limits_i x_{ij}$ and also $z_{ij} = 0 \Leftrightarrow x_{ij} = \max\limits_i x_{ij}$.

Just like in case of stimulants and destimulants, standardised values of nominants are also in the interval [0, 1].

Let $a = \min\limits_i x_{ij}$, $b = \max\limits_i x_{ij}$ and $c = \max\limits_i x_{ij} - \min\limits_i x_{ij}$, the transformation equation for diagnostic variables that are stimulants can be rewritten as follows:

$$z_{ij} = \frac{1}{c} x_{ij} - \frac{a}{c} \quad .$$

In similar way, one can rewrite the transformation equation for destimulant, i.e.:

$$z_{ij} = -\frac{1}{c} x_{ij} + \frac{b}{c} \quad .$$

From both equations presented here one can observe that ZUM is a method of linear evaluation of diagnostic variables, as each of the two shapes of functions are also applied in the process of standardisation of nominants.

There are many advantages of the method of zero unitarisation that should be specified, in particular:

1) values of variables resulting from the process of zero unitarisation transformation have no denomination;
2) variables transformed by ZUM take values in similar ranges ($(z_{ij} \in [0,1])$ which allows for their comparisons;
3) ZUM allows for standardisation of diagnostic variables that take both positive and negative values or only negative values;
4) ZUM does not exclude zero in the transformation process;
5) ZUM is based on simple equations that transform character of features so that they could be compared;
6) ZUM implies linear way of transformation of original set of diagnostic variables into the set of standardised diagnostic variables.

Construction of ranking of objects

The aim of all the activities described up to now in the paper is to create a ranking of objects with respect to the level of the complex phenomenon that is represented by the chosen set of diagnostic variables. Standardised diagnostic features denoted by Z_j take values from the same interval [0, 1] which allows for their aggregation and, in consequence, evaluation of each object (synthetic variable):

$$Q_i = \sum_{j=1}^{s} z_{ij} \quad , \quad (i = 1,...,r).$$

Values of Q_i form the following vector:

$$Q = \begin{bmatrix} Q_1 \\ Q_2 \\ ... \\ Q_r \end{bmatrix} \quad ,$$

so that each one of the r objects gets an estimate of the level of the complex phenomenon under investigation. This makes it possible to set a linear order in the set of all objects with respect to non-increasing values of the synthetic variable Q_i. The first object in the ranking is the one of the highest value of Q_i. The last object is the one that takes the lowest value of the synthetic variable Q_i. In this way, the ranking of objects is created on the basis of the level of the synthetic variable that is a global estimate of the complex phenomenon under investigation.

In case of numerous set of objects under investigation, which happens quite often, it seems to be helpful to divide the initial set into some sensible number of groups. The author suggests the division of objects into three groups:

Group I with high estimate of the level of the complex phenomenon;

Group II with moderate estimate of the level of the complex phenomenon;

Group III with high estimate of the level of the complex phenomenon.

The division procedure is based on the d parameter which is calculated as follows:

$$d = \frac{\max\limits_i Q_i - \min\limits_i Q_i}{3} \quad .$$

Then the three groups mentioned above are created in the following way:

Group I - $\left[\max\limits_i Q_i - d, \max\limits_i Q_i\right]$;

Group II - $\left[\max\limits_i Q_i - 2d, \max\limits_i Q_i - d\right)$;

Group III - $\left[\min\limits_i Q_i, \max\limits_i Q_i - 2d\right)$.

One should also notice that $\max\limits_i Q_i - 3d = \min\limits_i Q_i$.

ISSN 1691-3078; ISBN 978-9934-8466-3-2
Economic Science for Rural Development
No. 36, 2014

Conclusions

The research conducted in the paper allows for formulation of the following final remarks.

1. Zero unitarisation method is of universal character and may be applied in construction of rankings of different objects such as countries, voivodships, counties, districts, and similar.
2. Zero unitarisation method is a procedure of linear evaluation of different variables including those of negative values and zero.
3. Zero unitarisation method is implemented in the sequence of activities beginning from standardisation of features up to their aggregation, which in consequence allows for ranking construction of set of objects under investigation.
4. Zero unitarisation method is analysed from the theoretical point of view here but it indicates a wide range of possible applications.
5. The ranking of objects constructed on the basis of ZUM can be the starting point for the division of objects into three groups of high, moderate, and low level of development according to the complex phenomenon under investigation.

Bibliography

1. Bock, R. D. (1975). *Multivariate Statistical Methods in Behavioural Research*, Mc Graw-Hill, New York.
2. Kukula, K. (2000). Metoda unitaryzacji zerowanej (*Zero Unitarisation Method*), PWN, Warszawa.
3. Szewczyk, J. (2012). Miara zroznicowania wyposażenia gospodarstw rolnych w techniczne srodki produkcji (*Measure of Differentiation of the Level of Technical Equipment of Farms)*. w: Metody ilosciowe w badaniach ekonomicznych.In: *Quantitative Methods in Economic Research, V*ol. XIII. pp. 204-211.

REGIONAL IMBALANCES IN THE AGRICULTURAL DEVELOPMENT IN POLAND

Elzbieta Jadwiga Szymanska[1], economics/ Dr.habil.
Warsaw University of Life Sciences

Abstract. The research study is aimed at determining the selected reasons for and characteristics of regional imbalances in the agriculture in Polan and recognising instruments of regional policy. The research used reference books and the CSO data concerning voivodships. The research showed that the agricultural development in Poland varies from region to region and this results from natural, organisational and economic as well as historical conditions. The actions taken within the framework of the regional policy in Poland should be oriented towards effective use of developmental potential of the particular regions in order to reduce regional disproportions as well as to the state's development and the increase in its competitiveness in the European Union. Significant instruments of execution of regional policy are financial resources obtained from structural funds.

Key words: production factors, agriculture, regional policy, structural funds.

JEL code: Q10, R10, R11, R58

Introduction

The agriculture and rural areas of Poland are characterised by considerable regional imbalances, which are the consequences of natural, organisational, and economic conditions (Krasowicz, Kopinski, 2006). What is more, an important source of these imbalances stems from different historical experiences. Spatial variation of development becomes a fundamental problem of the modern economy, and levelling regional disproportions in this scope constitutes the main aim of the measures taken within the framework of regional policy.

Unevenness of development at a regional level is connected with an economic activity and investment of capital. Generally, the regions of higher level of economic development show an increased economic activity and vice versa. This leads to further disproportions and causes weakening a part of the regions despite the need of executing sustainable economic development practices. Therefore, there is a necessity of regionalisation of developmental policy in order to give equal opportunities to the regions of unfavourable conditions. Simultaneously, the regional development should be subordinated to the state's long-term policy, and there should be a research study concerning conditions and possibilities of the particular areas conducted prior to the establishment of strategies of regional development (Wiatrak, 1999).

The level of the particular regions' development determines the level of their competitiveness towards each other. Currently, among the basic factors influencing this process, one can mention modernity, diversity and innovativeness of regional economy, quality of spatial development, level of

[1] Corresponding author. Tel.: + 48 22 593 4227; fax: + 48 22 593 4256
E-mail address: elzbieta-szymanska@sggw.pl

infrastructure development, and human capital thanks to which the regions are capable of making the offer attractive to participants of international markets (Sokolowicz, 2008).

The existent imbalances in the regional development are challenging to the regional policy on the one hand, with regard to increasing economic, social and territorial cohesion; and on the other hand, within the scope of increasing competitiveness and attractiveness of the regions by means of investments in the economy based on knowledge, encouraging entrepreneurial behaviour, increasing the research and innovation potential, and developing transport and telecommunications infrastructure (Kurek, 2010). What is more, imbalances of agriculture and rural areas in Poland are important reasons for the regional policy. These are indicators of problems requiring a support and objective scientific evaluation.

The research is aimed at determining the selected reasons for and characteristics of the regional imbalances of the agriculture in Poland, and recognising instruments of regional policy. To attain the main objective, there were several detailed tasks formulated:

- to recognise diversity of voivodships with regard to UAA share in their areas;
- to determine the percentage of persons employed in the agriculture in the selected administrative units;
- to identify the value of fixed assets in farms;
- to define the size of capital expenditures in the agriculture according to voivodships;
- to recognise the objectives of the agricultural policy of Poland.

The research used reference books concerning definitions of regions, reasons for regional imbalances, the EU regional policy, and its priorities. The analysis showed that a notion of region can be defined variously, e.g. from the economic, geographical, natural, political, statistical, administrative, and social perspectives. According to B. Klepacki (2006), a region is a separated area of specific features, structure, geographical environment, human and material resources with specific spatial relations. Whereas according to the Nomenclature of Territorial Units for Statistical Purposes (NTS), there are several levels, which can be used to divide Poland:

- NTS1 - the whole state;
- NTS2 - 16 voivodships;
- NTS3 - 45 sub-regions;
- NTS 4 - 314 powiats and 65 cities with powiat status;
- NTS5 - 2478 gminas and 18 districts of Warsaw.

In the article, the regions are voivodships according to the administrative division of Poland that has been effective since 1 January 1999. The basic source material was the data of Central Statistical Office (CSO) and the Ministry of Agriculture and Rural Development (MARD). The conditions of agricultural production associate with the form of basic production factors, i.e. land, capital, and labour. The utilised agricultural area in the structure of voivodships' area, size of farms, proportion of workforce employed in agriculture and in terms of utilised agricultural area unit (UAA), value of fixed assets per 1 ha of UAA, and size of capital expenditure in farms were analysed in detail. The data analysis used the clustering method, grouping the voivodships according to three features: UAA share in the areas of voivodships; percentage of persons employed in the agriculture; and the value of fixed assets per 1 ha of UAA.

In order to create clusters, k-means method was used that belongs to the group of dividing methods[2]. It provides dividing of the whole group of objects according to the principle of maximum variance formulation between the particular groups with the simultaneous minimum variance formulation within the investigated groups. As the result of using this clustering method, the voivodships differing in the selected features were presented on the map.

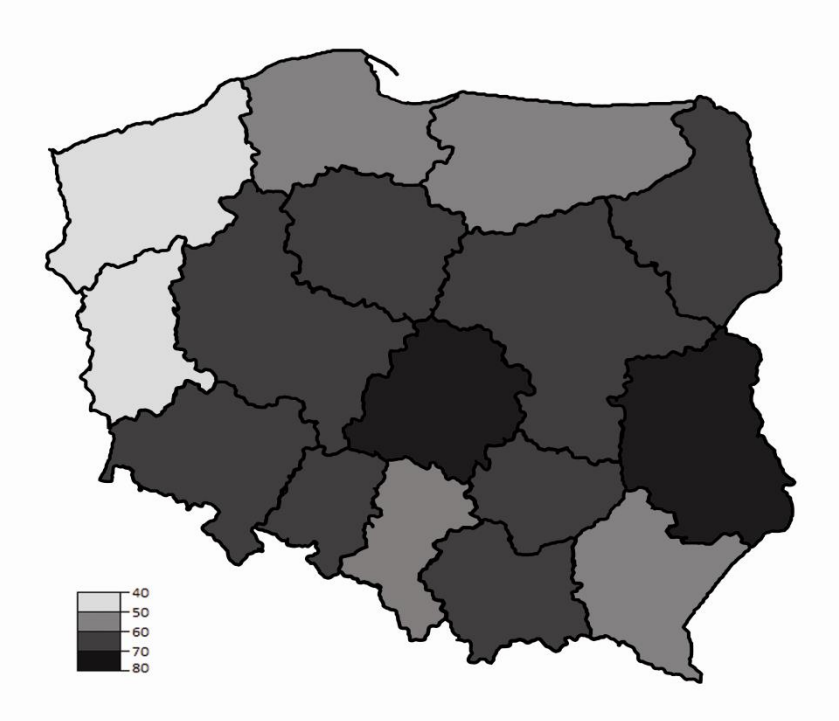
Research results and discussion

Production potential of agriculture is composed of three basic production factors, i.e. land, labour, and capital. Their resources and mutual relations are regionally differentiated, though. According to the CSO data, the utilised agricultural area in Poland was 15 million ha and 97.3% of it was privately held in 2012. The utilised agricultural area constituted 48.1% of the state's total area, and the crops covered 69.3% of this area. There is a permanent trend of reducing the utilised agricultural area to the benefit of other forms of land use. According to the agricultural census, in 2002, the utilised agricultural area was 16.9 million ha, and in 2010, it was 15.3 million ha. The decreasing of utilised agricultural area is connected with the development of urban areas, residential housing as well as industrial and commercial centres. Moreover, the state development with regard to the communication infrastructure is of great significance here. The gradual decreasing of UAA, when faced with the diminishing economic significance of agriculture, results in lowering of the production potential of this sector.

The percentage of utilised agricultural area in relation to the areas of the particular voivodships is diverse. In Lubelskie and Lodzkie voivodships, it was over 70%, and in Lubuskie and Zachodniopomorskie it was less than 50% (Figure 1). In the last decade, the most considerable growth of UAA area was noticed in Lubelskie and Mazowieckie voivodships, and the reduction of area of this type of land was recorded for Zachodniopomorskie and Warminsko-Mazurskie voivodships.

Imbalances in UAA areas also concern farms. In 2012, there were 1534.9 thousand farms in Poland, including 54.8 thousand farms of area of 1.0 ha inclusive, and nearly 1480.2 thousand of farms of more than 1 ha of UAA. The average area of utilised agricultural area in total to a farm was 9.81 ha, and the average area of UAA in farms of more than 1 ha of UAA was 10.14 ha.

[2] More information about this classification may be found in the article of Nowak E., 1990, Metody taksonomiczne w klasyfikacji obiektow spoleczno- gospodarczych (Taxonomic Methods in the Classification of Socio-Economic). Publishing house - PWE, Warsaw

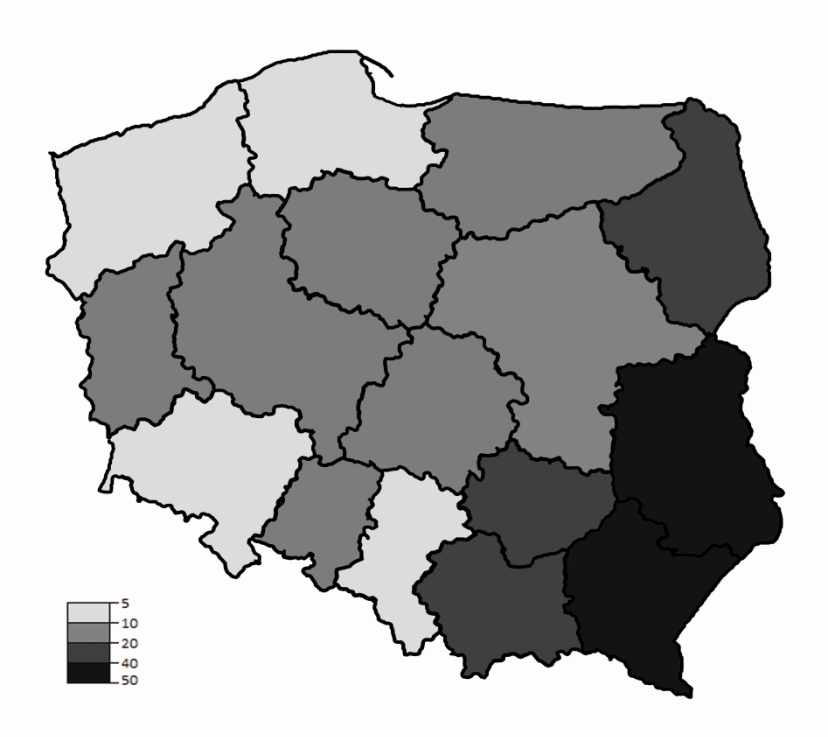


Source: author's construction based on the CSO data

Fig. 1. **Percentage of UAA in relation to the area of voivodship**

From the territorial perspective, the most considerable average of utilised agricultural area in farms was recorded in the following voivodships: Zachodniopomorskie – 17.57 ha, Warminsko-Mazurskie – 15.06 ha, and Pomorskie – 12.84 ha. The smallest farms, with regard to the area of UAA, were found in the following voivodships: Malopolskie – 2.43 ha, Podkarpackie – 2.69 ha, and Slaskie – 2.90 ha.

A human factor is also of great significance in connection with the development of agriculture. Despite the distinct downward trend, Poland still has got one of the highest, in comparison with other European states, percentage of population connected with agriculture. Nevertheless, the employment in this sector of the national economy shows very considerable regional imbalances. The highest percentage of the employed in the agricultural sector is visible in Lubelskie and Podkarpackie voivodships (Figure 2). Slightly lower values are found in three voivodships: Malopolskie, Swietokrzyskie, and Podlaskie. This is connected with a lack of some distinct alternatives for the agricultural production in these regions. The economic potential of these voivodships is too weak to generate non-agricultural jobs. What is more, a relatively high percentage of the employed in the agriculture is shown by Wielkopolskie and Kujawsko-Pomorskie voivodships; however, the situation there is different as these voivodships have a specialised agricultural production which is very profitable. The highest number of people professionally linked with the agriculture can be found in Lubelskie voivodship (328 thousand) where every third worker is engaged in the agricultural production. Furthermore, a high employment level in the agricultural sector is specific for the following voivodships: Mazowieckie, Podkarpackie, Malopolskie, and Wielkopolskie.



Source: author's construction based on the CSO data

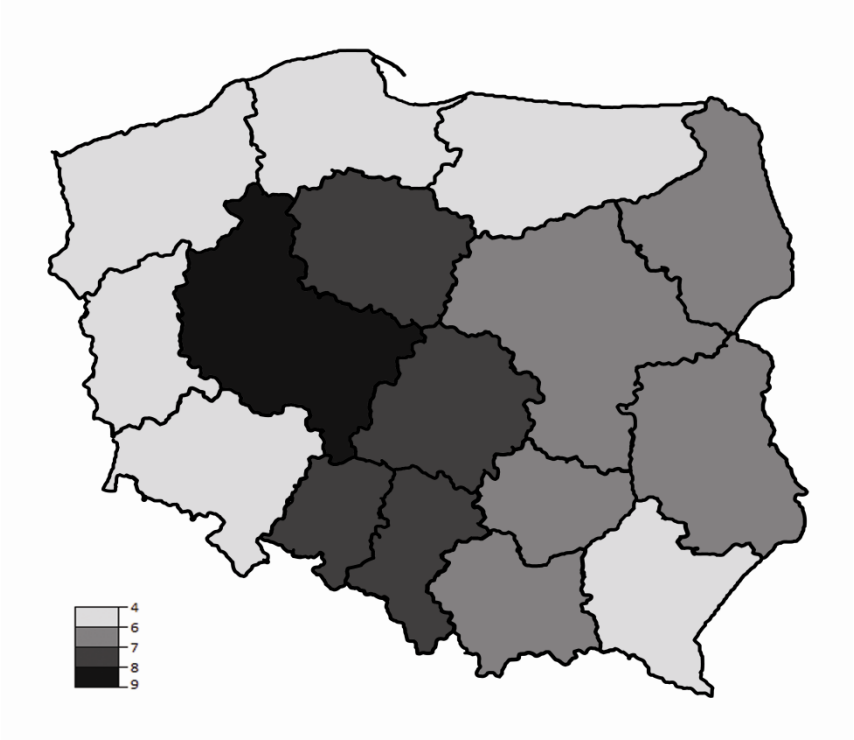
Fig. 2. **Percentage of persons employed in the agriculture**

A specific feature of employment structure in the Polish agriculture is a gradual decrease in the number of the employed in terms of the utilised agricultural area in the belt running from the Southeast to the Northwest. While in Podkarpackie and Malopolskie, this index reaches values from 34 to 40 persons employed per 100 ha UAA, in Warminsko-Mazurskie and Lubuskie this number is 6.5, and in Zachodniopomorskie it is only 4.6 persons/100 ha UAA. At the same time, more than 70% of people employed in the agricultural sector work on farms of area up to 10 ha.

The upper limit of production capacity of farms is determined by the quality and amount of fixed assets. According to the Polish Accounting Act, fixed assets include asset components and other objects completed and ready for usage on the receipt with an expected period of utility exceeding 1 year. According to the CSO, the basic type groups of fixed assets are as follows: buildings and structures; machinery; technical equipment and tools; transport equipment; long-term plantings; detailed meliorations; and livestock. Fixed assets influence organisation, day-to-day running, and economic and financial results of farms. With regard to production and economic aspect, they have several distinctive features:

- they participate in many production cycles;
- they retain unaltered tangible form during the whole production process;
- they are not tangibly included in the composition of new products;
- they are clearly diverse with regard to the tangible composition, shape, and technological level;
- as a result of active participation in production processes, they undergo a gradual physical and economic consumption;
- only their total consumption starts the process of renewal of fixed assets.

The highest value of fixed assets in 2010, namely, 8.8 thousand per 1 ha UAA, was detected in farms in Wielkopolskie voivodship (Figure 3). Slightly lower values were detected in four neighbouring voivodships: Kujawsko-Pomorskie, Lodzkie, Opolskie, and Slaskie. These data showed a considerable equipment of farms with fixed assets; yet, they did not reflect their actual consumption in these regions. A contrasting situation occurred in Lubuskie voivodship where the value of fixed assets per UAA area unit was only PLN 4.8 thousand. Similar values were noticed in the farms of northern Poland as well as Dolnoslaskie and Podkarpackie voivodships. However, the latter voivodship is characterised with a very small area of farms, while in the others one can find rather considerable areas which can indicate a different level of fixed assets' consumption.



Source: author's construction based on the CSO data

Fig. 3. **Value of fixed assets (PLN thousand/ha of UAA)**

A condition of continuity of business activity is successive renewal of production potential, which not only provides production but also the development of farms. The decisions on replacing operational fixed assets are the consequences of technological progress (Zarzecki 2006).

An effective policy within the scope of renewal of fixed assets requires the commitment of the funds derived from acquired income, credits, and loans, and the EU funds. In 2010, the highest investment expenditures of farmers were recorded in Wielkopolskie voivodship and constituted approximately PLN 322 per 1 ha of UAA. In Lubuskie, Mazowieckie and Malopolskie voivodships, the value of these expenditures was also high and it was over PLN 270 thousand. Definitely lower value of investments was noticed on farms in the following voivodships: Dolnoslaskie, Zachodniopomorskie, Podkarpackie, and Warminsko-Mazurskie - it was from PLN 176 to PLN 194/ ha of UAA.

All the investigations connected to the subject confirm the existence of regional imbalances of agricultural development in Poland. However, with regard to using different production potential and economic development level indicators, the studies show different classification of voivodships. For

instance, A. Kaminska (2011), based on synthetic indicator, showed that during 2008 and 2009, the highest level of development took place in Wielkopolskie voivodship, followed by Kujawsko-Pomorskie and Opolskie voivodships. An extremely different situation was found in Podkarpackie and Lubuskie voivodships. However, according to the research conducted by W. Poczta and N. Bartkowiak in 2012, the highest level of potential per 1 ha of UAA was characteristic of four voivodships: Wielkopolskie, Warminsko-Mazurskie, Zachodniopomorskie, and Opolskie. While the group of the lowest level of production potential included three voivodships: Podkarpackie, Lubelskie, and Swietokrzyskie.

The differences visible between the particular regions within the scope of natural as well as social and economic conditions of the agricultural production are also reflected in the achieved production results. The voivodships located in the Northwestern Poland are characterised with greater production potential and higher level of agricultural development. A different situation is found in the Southeastern voivodships of Poland.

The studies of S. Krasowicza (2009) showed that economic and organisational conditionings cause an increase in regional differences and determine diverse possibilities of adjusting plant production to the economic reality and policies of the EU. The existent regional imbalances force diversification of supporting actions and consultancy work methods. What is more, the current analysis of changes in the community policies enabling to take up adjusting actions is necessary.

According to J. Gilarowski (2011), there are two main reasons for the regional imbalances in Europe. The first one stems from geographical and historical conditionings which determine preferences of investors and producers. The second one is connected with changes in production location, abolition of barriers in the transfer of production factors, and liberalisation in the process of area integration which lead to a rapid development of regions of higher level of competitiveness.

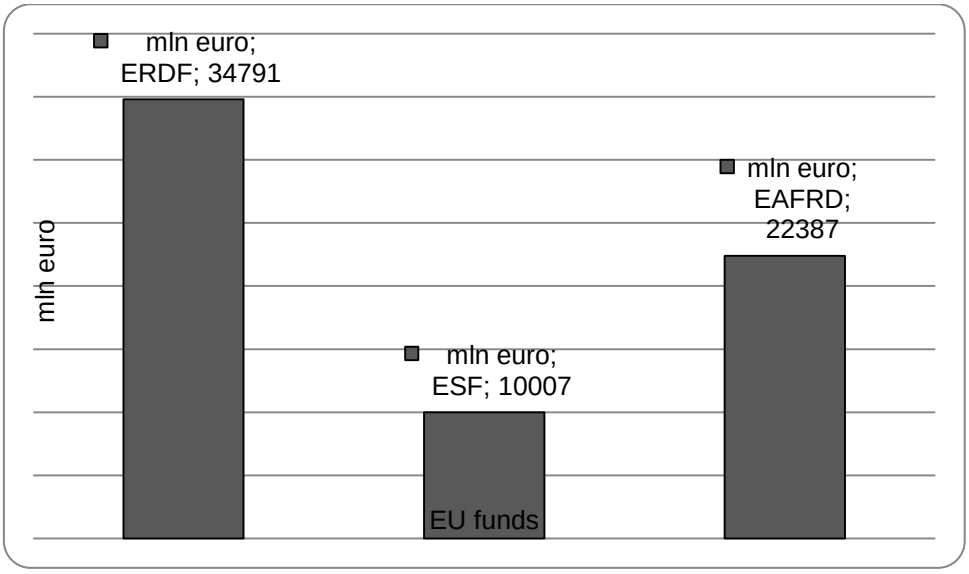
The different approaches to the reasons for the regional imbalances in the agriculture imply various opinions. According to some economists, imbalances in the agriculture of the particular regions were established by subsequent stages of social and economic development, and they are of a relatively constant character. Therefore, changing them radically is impossible (Runowski, 1990). However, according to the opinion of, for instance, Wiatrak (1999), the interregional imbalances in the agriculture can be overcome quickly by certain "efforts" of the agricultural policy, reallocation of means of production from higher-level regions to the regions of lower level of agricultural development.

The aim of the regional policy of the European Union is contributing to the reduction of the gap of development levels within various regions and the extent to which the least-favoured regions and islands, including rural areas, are lagging behind. Pursuant to the Treaty of Maastricht of 1992, the instruments (Cohesion Fund) and policies (cohesion policy) have been established and their common goal is reducing disproportions in the development of the regions and improving their competitiveness. Since 2007, one of the main priorities of the EU cohesion policy is convergence, i.e. supporting economic growth and creating new jobs in the least-developed regions, improving competitiveness and employment in more developed regions in the aspects of globalisation and transition towards the knowledge-based economy as well as territorial cohesion, i.e. supporting a closer integration within the Union's territory in all its dimensions aiming at sustainable development at the level of cross-border, supra-national and interregional cooperation (European Commission, 2005).

The strategic objective of the regional policy in Poland is effective use of specific, regional, and territorial developmental potentials in order to achieve goals of the state's development - growth,

employment, and cohesion from the long-term perspective. What is more, in the new regional policy up to 2020, three detailed objectives were adopted:

- supporting the improvement of regions' competitiveness;
- building territorial cohesion and counteracting the process of marginalisation in the problem regions;
- creating conditions for effective and partnership execution of developmental, territorially oriented activities.



Source: author's construction based on the MARD data

Fig. 4. **Received financial resources within the framework of the EU funds from 2007 to 2013**

Rural development measures are mainly financed by the European Agricultural Fund for Rural Development (EAFRD). The aim of this financing is improving farms' competitiveness, the environment and the countryside as well as the quality of life and economic diversification in rural areas (Figure 4). What is more, the measures of the European Social Fund (ESF) and the European Regional Development Fund (ERDF) indirectly contribute to the development of agriculture. The former one finances measures taken to fight unemployment and to develop human resources. The latter one supports infrastructure development, investments creating new jobs, local development projects, and small and medium-sized enterprises.

Conclusions, proposals, recommendations

1. The agricultural development in Poland is regionally diverse. The reasons of this diversity are geographical and historical conditions as well as those of economic policy. The particular regions differ in utilised agricultural areas' share in the area of voivodeships, the percentage of persons employed in the agriculture, and equipment with fixed assets. Considerable disproportions are especially found between voivodships of Southeastern and Northwestern Poland.
2. The existent regional imbalances force diversification of supporting actions determined by community policies and adjustment of consultancy works. The regional policy in Poland should pursue effective

use of developmental potential of the particular regions in order to reduce regional disproportions and to develop the state as well as improve its competitiveness in the European Union.

3. A significant tool of regional policy implementation is financial resources within the framework of structural funds. These resources are aimed at improvement of competitiveness of farms, condition of environment and landscape as well as quality of life, and diversification of rural areas. With regard to their use, human factor as well as knowledge and skills of authorities of states, regions, and small units and organisations are important issues.

Bibliography

1. European Commission (2005). Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007–2013. Brussels, 05.07.2005 COM(2005) 0299. Retrieved: http://ec.europa.eu/regional_policy/sources/docoffic/2007/osc/050706osc_en.pdf. Access: 15.01.2014.
2. Kaminska, A. (2011). Zastosowanie metod WAP do oceny poziomu przestrzennego zroznicowania rozwoju rolnictwa w Polsce (*Using the WAP Methods to Assess the Level of Spatial Diversification in Agriculture Development in Poland*). Inzynieria Rolnicza (Agricultural *Engineering*), No 1(126).
3. Klepacki, B. (2006). Polityka strukturalna Unii Europejskiej jako element lagodzenia dysproporcji regionalnych. (w:) Regionalne zroznicowanie produkcji rolniczej w Polsce (*Structural Policy of the European Union as Part of the Mitigation of Regional Disparities [in:] Regional Diversification of Agricultural Production in Poland*). Reports PIB, Wydawnictwo IUNG-PIB (Publishing House of IUNG-PIB). Pulawy, z. 3, pp. 19-31.
4. Krasowicz, S. (2009). Regionalne zroznicowanie polskiego rolnictwa a mozliwosci wdrazania polityk wspolnotowych (*Regional Differentiation of Agriculture in Poland and Possibilities for the Implementation of Community Policy*). Zeszyty Naukowe SGGW, Polityki Europejskie, Finanse i Marketing (*Scientific Papers of WULS, Agricultural University, European Policy, Finance and Marketing).* No 1(50), pp. 21-31.
5. Krasowicz, S., Kopinski, J. (2006). Wplyw warunkow przyrodniczych i organizacyjno-ekonomicznych na regionalne zroznicowanie rolnictwa w Polsce. (w:) Regionalne zroznicowanie produkcji rolniczej w Polsce. (*Influence of Environmental Conditions and Organizational-Economic Regional Differences in Agriculture in Poland. [in:] Regional Diversification of Agricultural Production in Poland*). Reports PIB, z.3, Wydawnictwo IUNG-PIB (Publishing House of IUNG-PIB). Pulawy, pp. 81-101.
6. Kurek, S. (2010). Przestrzenne zroznicowanie poziomu rozwoju regionalnego w Unii Europejskiej w swietle wybranych miernikow. (*Spatial Differentiation in the Level of Regional Development in the European Union in View of Selected Indicators*). Prace Komisji Geografii Przemyslu (*Commission's Work Geography of Industry*). No 16, p. 101.
7. Nowak, E. (1990). Metody taksonomiczne w klasyfikacji obiektow spoleczno-gospodarczych (*Taxonomic Methods in the Classification of Socio-Econ*omic). Publishing House - PWE, Warsaw.
8. Poczta, W., Bartkowiak, N. (2012). Regionalne zroznicowanie rolnictwa w Polsce. (*Regional Differentiation of Agriculture in Poland*). Journal of Agribusiness and Rural Development. No 1(23), pp. 95-109.
9. Runowski, H. (1990). Regionalne uwarunkowania rozwoju produkcji zwierzecej (*Regional Conditions for the Development of Livestock Production*). Wydawnictwo SGGW-AR (*Publishing House of Agriculture University in Warsaw*). Warsaw.
10. Sokolowicz, M. (2008). W kierunku nowej polityki regionalnej? Rozwazania nad przyszlym ksztaltem polityki regionalnej w Polsce [w:] Polityka spojnosci – ocena i wyzwania. (*Towards a New Regional Policy? Reflections on the Future Shape of Regional Policy in Poland [in:] Cohesion Policy - Evaluation and Challenges*). Materialy z konferencji, Ministerstwo Rozwoju Regionalnego (*Materials from the conference, the Ministry of Regional Development*). Warsaw, pp. 7–22.
11. Wiatrak, A.P. (1999). Polityka rozwoju regionalnego Polski (*Polish Regional Development Policy*). Roczniki naukowe SERiA (*Scientific Annals of SERiA*), t. I, z. 1, p. 37.
12. Zarzecki, D. (2006). Optymalizacja cyklu wymiany srodkow trwalych. [w:] Budzetowanie dzialalnosci jednostek gospodarczych – teoria i praktyka (*Optimisation of Fixed Exchange Cycle. [in:] Budgeting Activities of Economic Entities - Theory and Practice*). Wydawnictwo ART-TEKST (Publishing House - ART-TEXT). Krakow, pp. 481-489.

RETIREMENT ECONOMY WITHIN THE CONTEXT OF PROBLEMS OF DEMOGRAPHY AND THE LABOUR MARKET IN THE BALTIC STATES

Olga Pavuk[+], Dr.oec., associate professor
Baltic International Academy, Latvia

Abstract. The world economy grows old in line with the rise in life expectancy of population, which is especially characteristic for developed countries, namely, they form the basis of the national and world economy. Many researchers worldwide have noted a tendency of population ageing concurrently with rising unemployment. The adverse demographic situation and labour migration in the Baltic States allow speaking about inviability of the present retirement system for future pensioners.

The aim of the present paper is to identify new tendencies in the labour market that allow speaking about a crisis of the state retirement system. To achieve this aim, the author considers issues of population ageing in the world and Latvia by using the life cycle hypothesis of saving with regard to the Baltic States where the demographic crisis is particularly pointed.

The author raises a hypothesis about lowering retirement age that enables early youth employment. The author's proposal about early youth employment by reducing terms of learning at secondary school, and introducing professional training in the senior classes and colleges could be one of the ways for achievement of balance in the labour market. The virtualisation has led more professions to demand computer skills and ability to work with other equipment that can appear in the future. The education system must focus on lifelong learning. In the labour market, the youth will be ranked high if they acquire professions; consequently, youth unemployment will decline.

Key words: retirement economy, virtualisation, employment, demography.
JEL code: J26, J60, O32

Introduction

The aim of this paper is to identify new tendencies in the labour market that allow speaking about the crisis of the state retirement system. To achieve this aim, the author considers issues of population ageing in the world and Latvia by using the life cycle hypothesis of saving in relation to the Baltic States where the demographic crisis is particularly pointed. The author raises a hypothesis about lowering retirement age that enables early youth employment. The author's proposal about early youth employment by reducing terms of learning at secondary school and introducing professional training in the senior classes and colleges could be one of the ways for achievement of balance in the labour market. In the article, the author uses data of the international research on the labour market and works of foreign and Latvian researchers on demography and employment problems. The author has applied the methods of scientific abstraction, logical approach, deduction, and induction in the article. The proposal to lower retirement age and involve the youth earlier in employment can be considered as one of new approaches for the labour market regulation.

[+] Corresponding author. Tel.: + 371 29269645
E-mail address: olga.pavuka@gmail.com

Research results and discussion

Retirement economy **as one of the world economy tendencies**

The first state pensions appeared in Germany under the rule of "the Iron Chancellor" Bismarck, in 1889. They were paid to workers who reached the age of 70; however, at the time the average life expectancy was only 45. In other developed countries, the old age pension appeared only in the 20th century. A little more than 100 years passed and today with ever-increasing frequency, it is said that there is a crisis of the state retirement system. Actually, a new term "**retirement economy**" has emerged.

The term "**retirement economy**" as no other one characterises realities not only of the modern labour market but also of the world economy. In the "**retirement'' economy, the** growth is obviously weak and incapable to support full employment as it is focused not on the growth but on the consumption as Alexei Mikhailov, an expert at the Centre of Economic and Political Research (EPI centre), writes. It is one of the new principles of economic performance which has not been understood / *embrac*ed by economic science and practice yet.

The world economy grows old in line with the rise in life expectancy of population, which is especially characteristic for developed countries, namely, they form the basis of the national and world economy. Many researchers worldwide have noted a tendency of population ageing concurrently with rising unemployment. "Population ageing exercises a decisive influence over the economy. Many trends develop, accumulate and eventually lead to the crisis, which has to change the principle of performance of economic system", A.Mikhailov (Mikhailov A., 2013) considers.

The empirical research of A.Mikhailov shows that such situation occurs when the national average age (half the population is older, the other half is younger) is 35-40. Therefore, the national requirements to economy change with ageing. If the "new" economy is ready to work and put away *money for the future,* the "old" economy inclines to start spending that has been saved earlier. It is necessary to benefit from that has been saved up while there is health. The "old" economy sharply increases the tendency to consumption.

According to "The **World Development Report 2013**" prepared by the World Bank, about 200 million people cannot find work, and one third of them is younger than 25 (World Bank, 2012*)*. At the same time, many countries raise the retirement age. There is a contradiction and its resolution is worthy of the Nobel Prize in Economics.

One of the arguments of the supporters of raising the retirement age is increasing life expectancy of the population connected with improvement of health treatment and health promotion in all of its aspects. Indeed, many people in developed countries keep performance capability much longer; they are ready to continue employment.

Another argument is absolutely different and connected with a lack of social security means for payment of decent pensions because of the decline in birth rate and, respectively, reduction of labour force. It is particularly felt in many countries with anaemic or emerging economy and where the invisible economy reigns.

The demographic crisis has affected many Western countries, including the developed ones. However, owing to maturity of economy in developed countries, issues of social security are not

particularly pointed there in comparison with the new European countries. Nevertheless, the old countries also worry about provision of decent pensions for their next generations.

In fact, in the work "The life-cycle hypothesis and inter-country differences in the saving ratio'', published in 1966, one of the Nobel Prize winners in economics Franco Modigliani used the life cycle hypothesis of saving in the long-term plan for testing of alternative retirement plans. Modigliani proved that saving was closely connected with the growth rate of population as this rate influenced the ratio of young and retired people to labour force (Modigliani F., 1970).

Nevertheless, today the author will speak about problems that are closer to us, i.e. about the Baltic States where the demographic crisis is particularly pointed. Demographers speak about unattractive prospects, furthermore, some of them have even predicted terms of extinction of the nation-state. "If in the next three - five years "demographic breakthrough" is not reached, the situation threatens to become irreversible as Latvia will get into the "demographic hole" soon, and the number of women of fertile age will sharply decrease,'' Latvian demographer Ilmars Mezs (Mezs I., 2011) says. I.Mezs assumes that in only one generation the number of Latvians becomes less than the number of Estonians. Now, the hope of the state is people at the age of 25–35 without children or with one child. If this generation is not motivated to family foundation and parity progression, then in 2050–2060, the number of immigrants in Latvia will be compared with the number of local population, while in 100 years - the number of descendants of local community will be less than half a million according to the demographer. This problem especially concerns the ruling politicians.

Among the Baltic States, the most adverse demographic situation is in Latvia where the ratio of elderly people (over the age of 65) to labour force (15–64 years of age) is the largest (28%). Demographic projections say that by 2040 in Latvia this ratio will have reached 43%. However, the projections are not less disturbing for Lithuania and Estonia as in these countries the dependency ratio can reach 42% and 40% respectively.

In the middle of the first decade of the 21st century, the projections of Latvian demographers had been much more optimistic than they actually turned out to be in reality. Therefore, in 2005 the famous demographer, professor Peteris Zvidrins predicted that by 2010-2015 the population of Latvia would have been reduced from 2.32 million to 2.17–2.07 million people, and by 2050 — to 1.87 million. Similar projections were given by the UN, Eurostat, and scientists of University of Latvia. They predicted reduction of Latvian population to 1.6–1.7 million people by 2050 (Population Reference Bureau, 2012).

In fact, in 2011 the census enumeration already showed that the number of inhabitants in the country had fallen to 2 million and was continuing to decrease. According to the research of the Population Reference Bureau (the USA) carried out in 200 countries, Latvia as well as Taiwan is rated to the countries with the lowest birth rate (1.1).

Table 1

Population in the Baltic States, million

No.	Country	2012	2025	2050*
1.	Estonia	1.3	1.3	1.2
2.	Latvia	2.0	1.9	1.6
3.	Lithuania	3.2	3.0	2.7

Source: *The estimation of the World population Data Sheet. 50 Years. 1962—2012. Population Reference Bureau, 2012

In the top 10 rating of the countries with the lowest birth rate, there are Singapore, Bosnia-Herzegovina, South Korea, Hungary (1.2) and Moldova, Poland, Romania, Portugal (1.3). The highest birth rate is in Nigeria (7.1). According to the projections of the researchers, by 2050 the Latvian population in comparison with 2010 will have been reduced by 19.8% or to 1.8 million inhabitants (Population Reference Bureau, 2012).

According to P.Zvidrins's projections, life expectancy will grow under the general decline of the Latvian population. By 2050, it is expected that the average age of women will be 82, and men — 74. At the same time, labour force will have been reduced from 1.6 million in 2005 to 1 million in 2050, and the number of inhabitants at the age of 65 + will have increased from 381 to 493 thousand people. The ratio of persons attained their retirement age will increase from 16.5% in 2005 to 26–29% in 2051 (Zvidrins P., 2006).

According to the projections of the edition of "Demografija ir MES'', at the end of the century inhabitants of Lithuania aged 65 and older could also make 40% of the entire population (about 18% at the present moment). Consequently, even if the birth rate starts improving, the population's ageing will proceed in any case. Even the **decline in migration** will not increase the growth rate of the population as a whole (Karalyunayte U., 2013).

Besides the low birth rate, it is also necessary to mention substantial out-migration of the working-age population to other countries with good working opportunities. According to the professor Michael Hazan's (University of Latvia) estimates, since 2000, at least 300 thousand people have left Latvia, and rates of labour force migration remain at the same level (Advanced Social and Political Research Institute, 2011). In the recent research performed by University of Latvia and the Institute for the Study of Labour IZA (Germany), it was noted that the migration has significantly contributed to the decline in unemployment in Latvia (Advanced Social and Political Research Institute, 2011). It became even more noticeable in 2010-2011 when the direct impact of labour migration on the unemployment rate increased. Accordingly, without the increase in migration the situation in the labour market of Latvia could be even worse.

The adverse demographic situation and labour migration are the basis of pessimism and non-confidence of the population, especially of the youth, in the state retirement system. The situation with payment of social tax is good only at government agencies and enterprises and at large foreign companies. Small and medium-sized businesses are by half in the invisible economy. People understand that if at the moment of their retirement there is not enough labour force in the country and the number of young people has been reduced, it will not be possible to resolve the issue of decent pensions. The raising of retirement age will hardly help to make a difference.

However, the retirement age is raised in the majority of civilised countries. In Europe and the USA, it is usual to retire at the age of 65; in some countries the retirement age for women is slightly lower. In developing economies Russia and China, the retirement age is lower, i.e. 55-60 years. In fact, recently the president of Russia has declared that the retirement age will not be raised in the country. Nevertheless, it is not the case of the Baltic States, which although were formerly a part of the USSR, now are a part of the European Union and follow the "old" Europe. Not that long ago, men and women retired at the age of 62 in Latvia but now the retirement age gradually increases until it will reach 65.

Estonians joke: "In Estonia our pension is as the skyline: the closer you are to it, the further it is from us".

In the Baltic States, the size of pensions leaves a great deal to be desired. To give a complete picture of the pension problem, it is necessary to use the data of financial review on private households in the Baltic States conducted by the experts of SEB bank. The data reveal that Lithuanians have the smallest pensions but the most adverse demographic situation is in Latvia.

The average old-age pension in Lithuania in the 4th quarter of 2012 was EUR 236. In Latvia and Estonia, the average old-age pension is EUR 271 and EUR 316 respectively. For example, in Latvia, 53% of pensioners receive EUR 271-285, and 24% — less than EUR 214. Here, it is necessary to note that the minimum subsistence income in the country is EUR 247, i.e. three quarters of pensioners live on the breadline or below the poverty line.

The size of retirement savings in relation to investments in Estonia increased from 25% in 2008 to 37% at the end of 2012, in Latvia — from 22 to 44%, and in Lithuania — from 15 to 25%. The contributions to the second pension pillar are larger than to the third one. The size of the second pillar pension savings per inhabitant is EUR 1140 in Estonia, EUR 720 in Latvia and EUR 498 in Lithuania. In Latvia, 1.2 million people or practically all taxpayers of the country have entered into the second pension pillar. Whereas, 18% of all taxpayers have entered into the third pension pillar (Pavuk O., 2013b).

The experts assume that on a long-term horizon, in a couple of decades, the 1st and 2nd pension pillar will provide the average wage earner with about 40% of his or her previous labour income. However, it is unlikely to save for decent retirement. In fact, demographic and migratory waves will break off all efforts to create the traditional three-pillar pension system.

Because of the adverse demographic situation with ever-increasing frequency, there is a concern of inviability of the present retirement system in the Baltic States. Financier Girts Rungainis talks about the necessity of fundamental changes in the present social system and refusal from the social tax (Rungainis G., 2012). Teodoras Medaiskis, an associate professor of the University of Vilnius, also reckons that pensions should be considered more widely. If in the country, there are few employed people and many pensioners, taxes of the employed people will not be *sufficient for* decent pensions. Therefore, in order to have a decent old age, people should take care of themselves: to work longer, to retire later, to be lifelong learners (Pavuk O., 2013a).

Nevertheless, it is necessary to return to the world labour market where another tendency more strongly makes its presence. The mentioned report of the World Bank says that even today in the world the ratio of employed people and those engaged in small or family business is approximately equal, 1.65 billion and 1.5 billion people respectively; and transfer to small business will proceed. For this reason in the field of economy and social sciences, according to the research of "Thomson Reuters Essential Science Indicators", the subject connected with activity of family business is among the top ten of the most quoted scientific researches in the world (King C., Pendlebury D. A., 2013).

One more trend is that a universal virtualisation of economy and shift in work in favour of employees that are more skilled will demand fewer workers in all spheres of the national economy that uses wage labour (Pavuk O., 2011). Overboard there are a great number of unskilled workers who until recently were called a hegemony, a driving force of economy.

The unemployment growth, which was until recently explained by the world crisis, does not decrease and remains at the level of 10 and more percent even in the developed countries. In the labour market, the shortage of engineering specialities is far more acute. In the recent world top 20 of the most wanted professions prepared by BBC analysts, only one profession (a psychologist) is related to humanists. Engineers, IT experts, health professionals are wanted in different countries of the world and promised decent remuneration (BBC Russia, 2014).

It is enough to remind that the ratio of production branches and service trade in the world economy changed long ago in favour of the last one, and it is 20/80. However, immediately the problem of collecting the social tax from employees and business, which the state retirement pensions are paid from, occurred. Treasury reimbursement is not promoted by such widespread in many countries form of business as micro enterprises, which pay only one tax, i.e. the turnover tax. For example, in Latvia it is 9%, in Lithuania — 6% (in Estonia such a form of business does not exist). Such enterprises pop up like mushrooms after the spring rain and enable the people who have been forced out of the labour market to make a living, and that is good. However, the reverse side of the coin is the decrease in contributions to the system of the government social security funds, as micro enterprises cannot cover expenses of social security expenditures of their employees.

In such a situation in many countries, including the Baltic States, the mood of meaninglessness to pay the social tax makes itself felt distinctly, especially among young population, like "in any case, by the time of retirement the system will have ceased to work''. With ever-increasing frequency, we hear appeals to be engaged in savings for an old age, including through the insurance system or private pension funds. Probably, it is a way out of the stalemate situation but something must be done concerning other segments of the population who need social support, i.e. disabled people, orphans, children from the broken families.

Conclusions and proposals

- On the one hand, the adverse demographic situation allows speaking about inviability of the present retirement system in the Baltic States and inability to retain further the three-pillar pension system. On the other hand, raising of retirement age will promote further displacement of the youth from the labour market.
- One of the solutions to the global problem of youth employment could be a paradoxical decision to lower retirement age, to enable people, if they do not want or cannot work, to retire earlier. It is quite likely that the government will be forced to abandon the state retirement pensions for the majority of working-age population, having kept private pension funds.
- At the same time, it is necessary to carry out the policy of early youth employment: to change the education system at schools by reducing terms of learning and introducing professional training in the most wanted professions in the senior classes and colleges; to encourage university study alongside employment in order to introduce the youth to the labour market as soon as possible, because, as the author has mentioned before, the shift in work has sharply changed, thus, sooner or later it will be necessary to revolutionise the education system as well.

- A universal virtualisation of economy and shift in work in favour of more skilled employees demand fewer workers in all spheres of the national economy that uses wage labour. The virtualisation has led more professions to demand computer skills and ability to work with other equipment, which can appear in the future. Today, it is clear that the usual education, i.e. school - higher education institution, has become outdated. In the fast-changing world, it is necessary to become lifelong learners. The winners have got not one but some professions or specialities. Such approach will surely bear fruit. The youth will be ranked high in the labour market.
- The older generation that has longer performance capability should be enabled to work part-time with probable transfer to other easier work. Flexible work systems, including family business where people of pre-retirement and retirement age can always be useful will gain ground.
- Economic recovery without the resolution of the unemployment issue, which is directly connected with considerable problems of population ageing, threatens with new political and social fallout. The society needs to change its way of thinking and seriously reflects on self-organisation. The abstract concept of solidarity between generations needs to be filled with a real live sense. It is arguable that the solidarity between generations is shown in the situation when, according to the famous anthropologist Mary Catherine Bateson, "people think of the future in the context of the future generations and responsibility for the future, which has not been limited to their own life" (Bateson M. C., 2011).
- The issues of active ageing of population have been reflected with highest priority in the Seventh Framework Programme of the EU (FP7) which has become the main source of financing of scientific researches and technological development in Europe. Without social innovations and radical reforming of retirement systems, it is impossible to adapt to demographic challenges of the new century.

Bibliography

1. Bateson, M. C. (2011). *Composing a Further Life: The Age of Active Wisdom*. New York: Knopf Doubleday Publishing Group, p. 272.

2. Karalyunayte, U. (2013). Nakopit na dostojnuju starost ne poluchitsja (It is Unlikely to Save for Decent Retirement). *Ru.delfi.lt.* Retrieved: http://ru.delfi.lt/news/economy/nakopit-na-dostojnuyu-starost-ne-poluchitsya.d?id=61148709. Access: 15.04.2013.

3. King, C., Pendlebury, D. A. (2013) Web of Knowledge. Research fronts 2013. 100 Top-Ranked Specialties in Science and Social Science. *Thomson Reuters*. Retrieved: http://img.en25.com/Web/ThomsonReutersScience/1002571.pdf. Access: 03.01.2014.

4. *Latvija. Parskats par tautas attistibu, 2010/2011. Nacionala identitate, mobilitate un ricibspeja.* (Latvia. Human Development Report, 2010/2011. National Identity, Mobility and Capability). (2011). Riga: Advanced Social and Political Research Institute, p. 154.

5. Mezins, I. (2011). Berni – latviesu strategiskais kapitals (Children are the Latvian Strategic Capital). *Kapitals*, Volume 158, Issue 2, pp. 12-15.

6. Mikhailov, A. (2013). "Pensionnaja" ekonomika diktuet ("Retirement" Economy Dictates). *On-line newspaper gazeta.ru*. Retrieved: http://www.gazeta.ru/column/mikhailov/4911557.shtml. Access: 02.01.2013

7. Modigliani, F. (1970). *The Life-cycle Hypothesis and Intercountry Differences in the Saving Ratio, in Eltis W. A., Scott M. FG., and Wolfe J. N., eds., Induction, Growth, and Trade: essays in honour of Sir Roy Harrod*. Oxford: Clarendon Press. pp. 197–225.

8. Pavuk, O. (2013). Latvijskie uchenye osparivajut vyvody MVF po bezrabotice (Latvian Scientists Dispute the Findings of the IMF Concerning Unemployment). *Baltic-Course.com.* Retrieved: http://www.baltic-course.com/rus/_analytics/?doc=71225. Access: 01.03.2013.

9. Pavuk, O. (2013). Pensionnye fondy v Latvii gotovy k perehodu na evro (Pension Funds in Latvia are Ready to Adopt the Euro). *Baltic-Course.com.* Retrieved: http://www.baltic-course.com/rus/_analytics/?doc=73292. Access: 15.04.2013.

10. Pavuk, O. (2011). Bitva za ljudskie resursy v Latvii vstupaet v novuju fazu (The Battle for Human Resources in Latvia is Entering a New Phase). *Baltic-Course.com.* Retrieved: http://www.baltic-course.com/rus/opinion/?doc=40187. Access: 18.04.2011.

11. Rungainis, G. (2012). Riga ka Eiropas regionalais centrs ir lielaka Latvijas veiksme (Riga as the European Regional Centre is the Greatest Latvian Success). *Kapitals*, Volume 177, Issue 9, pp. 63 – 66.

12. Zvidrins, P. (2006). *Latvijas iedzivotaju skaita un vecuma sastava prognozes. Demografiska attistiba Latvija 21. gadsimta sakuma. Zinatniski petnieciskie raksti* (The Projections of the Latvian Population Number and Age Structure. Demographic Trends of Latvia in the 21st Century. Scientific research articles). Riga: Zinatne, Volume 3 (9). pp. 164-187.

13. World Bank. (2012). World Development Report 2013: Jobs. *Washington, DC. © World Bank*. Retrieved: http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1322665883147/Overview_Russian.pdf. Access: 02.01.2013.

14. World Population Data Sheet. 50 Years. 1962 - 2012. (2012). *Population Reference Bureau.* Retrieved: http://www.prb.org/pdf12/2012-population-data-sheet_eng.pdf. Access: 03.01.2013

15. 20 samyh nuzhnyh professij v mire (the 20 Most Wanted Professions in the World). (2014). *BBC Russia.* Retrieved: http://www.bbc.co.uk/russian/business/2013/04/130326_wanted_migrants_clickable.shtml. Access: 20.01.2014.

VALUATION OF PUBLIC PROJECTS BY THE METHOD OF COST-EFFECTIVENESS ANALYSIS

Vilija Alekneviciene[+], Dr, prof.; **Jurgita Baranauskiene**, PhD student
Institute of Economics, Accounting and Finance; Aleksandras Stulginskis University, Lithuania

Abstract. Scientists hold intense discussions which method to select for the valuation of public projects in order to evaluate the total social benefits generated by a public project and to make the most effective investment decision. The characteristics of public projects and the peculiarities and problems of their valuation revealed in the paper have an influence on the selection of public project valuation methods. The paper presents a methodology for cost-effectiveness analysis adapted for the valuation of public projects, while the evaluation of investment alternatives for the selected public project makes it possible to look at the problems of public project valuation from the practical approach. The research of the paper is aimed at revealing the advantages and limitations of the cost-effectiveness method used to valuate public projects in order to formulate a theoretical framework for improving public project valuation methods or developing new valuation models.

Key words: public project, social benefits, cost-effectiveness analysis.

JEL codes: H43, H54

Introduction

Public projects mean investments financed by public foundations directed to the creation of public welfare. Public projects can create financial, economic, and social benefits. In rare cases, they generate financial benefit but even if generated, this benefit is minimal, while public projects are financially ineffective. Public projects produce economic benefits which can be described as decreased costs resulting from the activities of a public project. The pursuit of economic benefits is not the priority goal of public projects. Economic benefits and social benefits for the public are often intertwined. The main objective of public projects is positive change in the human social environment and satisfaction of public needs, i.e. the creation of social benefits.

The aims of preparing and implementing public projects are the achievement of sustainable development, rural or regional development, reducing poverty, ensuring equal opportunities, and other strategies and goals of countries. Where financing sources are limited, it is necessary to select investment alternatives, i.e. to evaluate public projects in economic terms. Scientists hold active discussions as to: how to evaluate social benefits provided by public projects, what indicators to use to characterise it, and what units to use to measure it. What method of valuation should be selected for public projects in order to evaluate the total benefits generated by a project depending on project goals and expected effects of the project? Scientists suggest evaluating public projects using different methods, one of which is a cost effectiveness analysis.

The aim of research is, after analysing and summing up the characteristics of public projects presented in the scientific literature and the peculiarities of their valuation, to reveal the methodology of cost-effectiveness analysis and evaluate investment alternatives for a public project by the method of

[+]Corresponding author: Tel. +3707752259
E-mail address: vilija.alekneviciene@asu.lt

cost-effectiveness analysis. *Research tasks:* to analyse and summarise the characteristics of public projects and the peculiarities of their valuation; to present a methodology for cost-effectiveness analysis applied for the evaluation of public projects; and to evaluate investment alternatives for a public project by the method of cost-effectiveness analysis. The analysis and synthesis of the scientific literature, and the systematisation, comparison and summing-up of information were used in order to achieve the aiml defined and implement the tasks determined by it. Investment alternatives for a public project were evaluated by the method of cost-effectiveness analysis.

Research results and discussion

1. Characteristics of public projects and peculiarities of their valuation

In many cases the public projects, unlike business, do not produce income but provide economic and social benefits for the public. Investment projects, specifically aimed at reducing poverty, are related with the aspects of welfare but not with income. Benefits derived from such projects are difficult to quantify (Van De Walle, 2002). Benefits brought by public projects are intended for satisfying public needs and they are generally referred to as social benefits. Investments in the public sector have to meet the social, economic, and political criteria (Medaglia *et al*., 2008).

The main characteristics of public projects are presented in Figure 1.

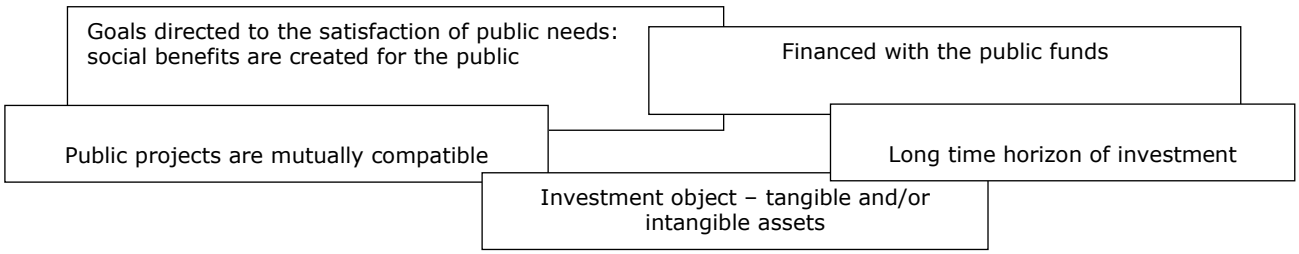


Fig.1. **Main characteristics of public projects**

The essential feature of public projects is that their goals are directed to the satisfaction of public needs but not to a direct financial outcome. Public projects are financed by the public funds (state or municipal budgets, funds from various non-private foundations). Public projects are long-lasting ones, ranging from 5 to 100 years and above. Social benefits are often reaped by future generations. Scientists highlight another exceptional feature of public projects, i.e. uncertainty, and relate it with the time horizon, riskiness, and the uncertainty of the expected project effects (Heikkinen, Pietola, 2009).

Investments in public projects can be directed to the creation of tangible assets (road building, and the creation, renovation or development of science, healthcare or entertainment facilities) or the formation or improvement of certain skills and competences (improvement of competences of specialists in different fields, or formation or advancement of the skills of a certain social group). Mutually compatible projects mean that they can be implemented together, and their selection is based on the maximisation of outcomes under the limited sources of finance. The essence of public projects can be revealed with the help of a logic diagram for public projects, i.e. a consecutive relationship between project goals, activities, and expected effects.

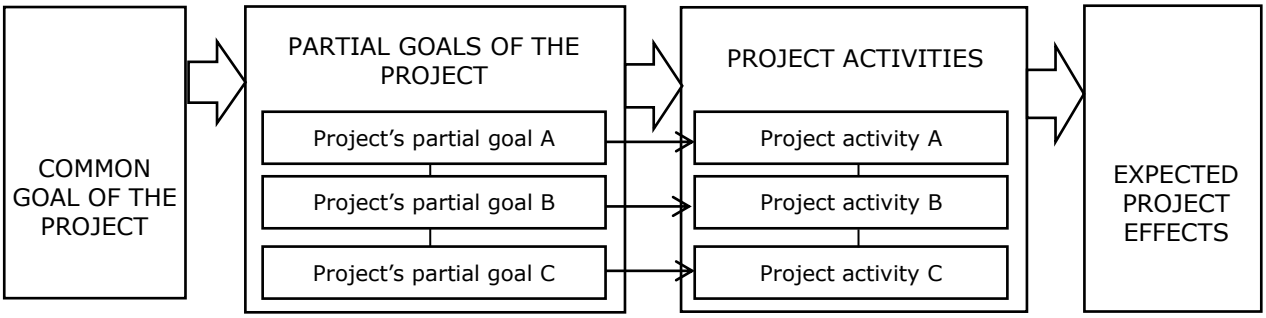


Fig.2. **Logic diagram of a public project**

The project's common goal can be split into partial goals for the achievement of which certain activities are implemented as a consequence of which project results and impact on the public are expected. It has to be noted that the consistency of the goals and expected results of public projects are important in each project phase, i.e. planning, preparation, evaluation, and implementation.

Before an investment decision is taken, each project needs to be evaluated. One of the most popular methods used in the EU for public project appraisal is a cost-benefit method: investment costs and expected social benefits are evaluated at the net present value. The theoretical principles of cost-benefit analysis were detailed by R. Sugden, A. Williams (1978); Hanley, Spash (1993); Boardman *et al*. (2006); Pearce (2006), and other authors.

The scientific literature analysing the peculiarities of valuation of public projects frames a question: how to measure social benefits and what indicators are to be used to evaluate them? Another important problem concerning the use of cost-benefit method – the expression of the factors of social benefits in terms of money: how to quantify non-market goods, such as human life, environmental impact on human health etc. Scientists have not found a unanimous answer to the posed questions: how to quantify and evaluate social benefits provided by public projects for the public (Hanley, Spash, 1993; Bateman, Willis, 1999; Jacoby, 2000; Nyborg, 2000; Glazer *et al*., 2002; Van de Walle, 2002**;** Price, 2010).

A cost-benefit analysis attracts major criticism during scientific discussions also due to a theoretical justification of value, i.e. the evaluation of public projects is carried out by deviating from the main goals pursued by a project – creation of social benefits, while the evaluation concerns only what is measurable in terms of money. When evaluation priorities are selected inappropriately, the essential values, for example, ecology, sustainability, justice of distribution, or social welfare, are not always identified (Thaler, Sunstein, 2008; Parks, Godway, 2013).

The aspect of time is also particularly important for the evaluation of public projects as even if the future costs and benefits are known, decisions must be taken today. Calculation of present values is important. Future costs and benefits need to be recalculated – discounted which requires the selection of the appropriate social discount rate (Brukas *et al*., 2001; Hepburn, 2006; Sáez, Requena, 2007; Price, 2010; Gollier 2002; 2010).

Costs and benefits are also evaluated using a cost-effectiveness analysis. It is based on the same principles as a cost-benefit analysis and used in the cases where benefits cannot be measured in monetary terms or for the evaluation of the achievement of defined goals. Project goals can be evaluated only indirectly by linking costs with each proposed alternative.

Goals are indispensable, yet, alternative ways of implementing the goal are also necessary in order to allow for their comparison. The evaluation of public projects by the method of cost-effectiveness analysis faces a problem – different indicators may be employed for the achievement of the same goal and the characterisation of project result, i.e. created social benefits which are expressed by different units of measure. In that case, project alternatives are incomparable (Simic *et al*., 2011).

The advantages and limitations of cost-effectiveness analysis are revealed in the presented methodology and in the evaluation of the selected public project.

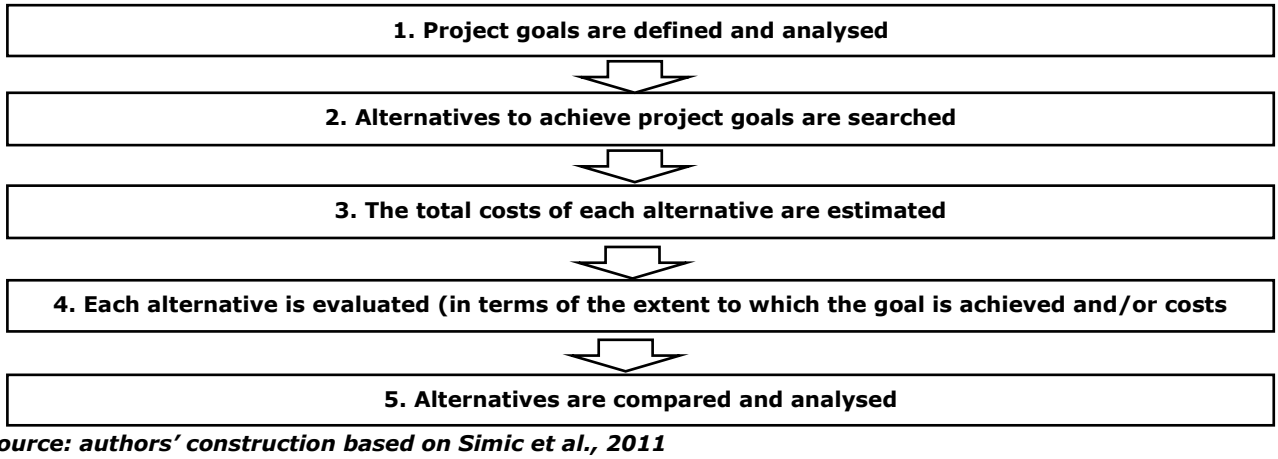
2. Methodology for cost-effectiveness analysis

The purpose of cost-effectiveness analysis is to locate resources, activity processes, or interventions that minimise the use of resources for the achievement of the desired result. Cost-effectiveness analysis determines the efficiency of various combinations in order to choose the lowest cost option. It is assumed that each option achieves the defined goals, while the cost-effectiveness analysis shows what inputs and tools are used to do so (Porter, Walsh, 1978; Bleichrodt, Quiggin, 1999; Ernst, 2006).

A cost-effectiveness analysis is used when choosing between alternative ways of achieving a certain goal. The problem of choosing between available possibilities is posed in three ways: 1) the choice falls on the project that ensures the implementation of the set goal at the lowest cost; 2) the choice falls on the project that allows the achievement of the set goal with limited available resources, and; 3) the choice falls on the project that ensures an optimal ratio between invested resources and the implementation of the goal (Simic *et al*., 2011).

While evaluating public projects, the combinations of investment funds and expected social benefits are formed respectively. Social benefits can be expressed by a number of indicators which can be quantified using various measures, while the comparison of alternatives must use the same indicators for social benefits.

The phases of cost-effectiveness analysis are presented in Figure 3. A cost-effectiveness analysis begins with the definition of goals. A clear goal or a group of goals relating with the execution of a task gives meaning to the entire action that is to be undertaken.



Source: authors' construction based on Simic et al., 2011

Fig.3 **Phases of cost-effectiveness analysis**

The next step is to consider the possibilities for achieving the set goal, after which the resources necessary for each possibility are specified and the criteria that will be applied in choosing the most favourable possibility are determined.

A cost-effectiveness analysis is performed by defining the costs of each project alternative according to the time of their appearance, after which the costs are discounted, i.e. translated into the present value. The use of this analysis is much more complicated when it comes to public sector projects where it is necessary to fulfil certain goals that are not directly measurable, for example, environmental or educational improvement.

With a view to making cost-effectiveness analysis suitable for the evaluation of public projects, the following conditions have to be met: determining a common goal or application for all relevant alternatives that must be achieved; the existence of alternatives to the achievement of the goal; and the existence of defined factors to express the project result.

In order to get the correct and representative results, the cost-effectiveness analysis must be carried in a certain order (Simic *et al*., 2011): 1) define the goals, purpose, application, and everything else of significance for the project. Cost-effectiveness analysis will find the best possible way for their achievement; 2) list the conditions necessary for the achievement of goals. This means to first present the basic prerequisite for the achievement of the goal, followed by the others; 3) develop alternatives for achieving the goals. At least two possible ways to achieve a goal must exist; 4) determine verification measures that are acceptable for the proposed alternatives; 5) choose an approach for determining fixed successes or fixed costs. In using fixed success criteria, the most favourable alternative is the one with the minimum price and degrees of success. The options that cannot achieve goals are excluded. In using fixed cost criteria, the amount of achieved results at a particular price is taken into consideration; 6) determine the advantages of an alternative expressed in established valuation measures; 7) express alternatives and their advantages in an acceptable way; 8) analyse different alternatives on the basis of success criteria and cost consideration; and 9) generalise the findings of the analyses done in the previous steps.

The main drawback to cost-effectiveness analysis is that no ways to generalise the indicators are presented after calculating costs and identifying social benefits created by a public project for the public. It remains unclear how to evaluate effectiveness, which becomes particularly difficult when it comes to the comparison of many project alternatives with many contradictory indicators. In such a case, an analysis is non-productive, as it is not clear which alternative should be chosen.

With a view to achieving the concrete result of analysis allowing for an efficient investment decision-making, quantitative and qualitative indicators can be combined by using scales, although, a cost-effectiveness analysis does not provide for such a step. When a rank scale or score scale of a wider spectrum is selected, an expert evaluation is necessary to rank valuation indicators for investment alternatives. If a score scale is simple and not wide (up to four positions), investment options can be evaluated by the public project provider. In the presence of equally summarised numerical result of investment options, an investment decision can be made by attaching priorities (weights) to valuation indicators. For this purpose, it is convenient to use one of simple formulas of multicriteria assessment methods. These methods help choose one best investment option.

Combining indicators by the SAW method:

$$S_j = \sum_{i=1}^{m} \omega_i \tilde{r}_{ij} , \quad (1)$$

where: S_j – value of multicriteria evaluation of the *jth* alternative; ω_i – weight of the *ith* indicator; $\tilde{r}_{ij}$ – value of the *ith* indicator for the *jth alternative* (Ginevicius, Podvezko, 2008).

As regards evaluation of public projects, the main advantage of cost effectiveness analysis lies in the fact that project evaluation is not separated from project goals, which ensures the justification of the selected evaluation indicators, a direct relationship with the satisfaction of priority needs of a target group. This is the essential advantage of cost-effectiveness analysis compared with a traditional cost-benefit analysis; however, it has to be noted that the method of cost-effectiveness analysis does not provide for the possibility of combining indicators for evaluating investment alternatives by attaching priorities to them. The aforementioned limitation of cost effectiveness analysis can be dealt with using multicriteria valuation methods.

3. Evaluation of investment alternatives for public projects by cost-effectiveness method

A public project to be implemented at a child care home (CCH) was evaluated In order to justify the advantages and limitations of cost-effectiveness analysis. Around 80 children permanently live in the CCH whose activities are financed from the municipal budget. The financing of children's daily needs is sufficient but additional financing is required for long-term investments. The aim of the public project is to reduce disparities between children living in the CCH and in families during the evaluation of which the most efficient investment alternative will be chosen using a cost-effectiveness analysis.

The common goal of the project is to improve living and learning conditions for children living in a CCH. The amount of initial investments is fixed – LTL 70000, and thereby, the aim is to choose, from alternative ways to achieve a goal, the project alternative that best satisfies children's needs using the available limited resources. After performing an analysis of the needs, the common goal of the project is divided into partial goals which are related with improving children's physical health and learning conditions, ensuring more meaningful leisure activities, extending artistic development possibilities and ensuring child security. Project options are formed on the basis of the project's partial goals (Table 1).

These investment options are mutually compatible but for limited financing sources only one project option can be implemented, and thus, the evaluation of the public project aims to choose the investment option that produces the greatest benefit for children. The project's expected effects can be measured by qualitative and quantitative indicators which were selected taking into consideration the operational provisions of the CCH.

When public projects are evaluated using the cost-effectiveness analysis, it is recommended to limit the number of valuation indicators to 5 or 6 due to possible complex combinations of the evaluation result and the evaluation, thus, excludes indicators having the same influence on all options, such as the number of benefiting children or the period of useful life of infrastructure developed under the project. The evaluation is limited to six indicators without ranking them according to the established priorities.

Table 1

Project's common goal, partial goals and investment options

Project's common goal	Project's partial goals	Project activities / investment options
To improve living and learning conditions for children living in a child care home	To encourage children's physical education, health promotion and sport activities	Option 1. Renovation of a sport hall and acquisition of sport gear
	To create conditions for children's artistic development and meaningful leisure activities	Option 2. Renovation of a ceremony hall and acquisition of instruments, audio equipment and theatrical clothing
	To improve and vary learning and cognition opportunities for children	Option 3. Setting up a computer classroom (acquisition of furniture, computer equipment, and training programmes)
	To ensure child security	Option 4. Installing security systems (setting up video cameras in the building's yard and common spaces without violating children's privacy)
	To improve the quality of living conditions	Option 5. Modernisation of kitchen and laundry equipment

A large number of options and indicators for the project's expected effects produces a complex combination and makes the options difficult to compare. In order to obtain the representative evaluation result of cost analysis, it is necessary combine indicators even though the method of cost-effectiveness analysis does not provide for doing so. A score scale from 0 to 3 is used for the provision of a numerical expression. The evaluation scale reveals the impact of investment alternatives on the project's target group according to the selected evaluation indicators for project effects.

Numerical value	0	1	2	3
Description of the effects of investment option on the evaluated indicator	No effects	Weak effects	Medium effects	Strong effects

In order to combine qualitative and quantitative indicators when comparing alternatives, a numerical value was also attached to the only quantitative indicator (appearing additional operational costs or savings thereof).

Investment alternatives for a public project in Table 2 are evaluated by attaching numerical values to indicators and summing them up.

Table 2

Evaluation of indicators for investment alternatives

Indicators	Investment alternatives					Notes
	1	2	3	4	5	
Improved health promotion conditions for children	3	0	1	0	2	The greatest improvement of health promotion conditions for children is achieved by creating conditions for practicing sports. Computers and internet access will be helpful in searching useful information about healthy lifestyle. Renovated kitchen equipment will allow for preparing healthier food for children
Improved conditions for children's meaningful leisure activities	3	3	2	0	0	Conditions created for practicing sports and involvement in artistic activities ensure children's meaningful leisure activities. Computer games adapted according to children's age are suitable for leisure activities as well as for self-development and broadening children's horizon
Improved ensuring of children security	1	1	1	3	0	Ensuring children's meaningful leisure activities helps indirectly ensure their security when children are directed to undertake purposeful activities. Installation of surveillance video cameras will help resolve arising conflicts and possible cases of fraud
Improved learning conditions for children	1	1	3	1	0	Computers are a training tool of senior grade students. Good conditions for children's leisure activities and self-expression determine better learning motivation. Surveillance video cameras will help create appropriate conditions for concentrating on studies
Improved living conditions for children	0	0	0	0	3	Renovation of kitchen and laundry equipment will help improve living conditions for children
Appearing additional operational costs (-) or savings thereof (+) LTL/year and numerical value according to the indicator valuation scale	0	0	-3600	-3600	2400	Modern kitchen and laundry equipment will require lower energy inputs. The new computer classroom and surveillance video cameras will require additional costs for electricity supply and establishing part of a staff position for regular equipment maintenance
	0	0	-1	-1	3	

Appearing additional operational costs or their savings are the only indicator that is not directly related with the main goal of the project. That indicator may be referred to as having lower priority, and thereby, a lower level of significance (weight) equalling 1 is attached to it. The significance attached to other indicators is 2.

Table 3

Evaluation of investment options by attaching priorities to indicators

Investment option	Improved health promotion conditions for children	Improved conditions for children's meaningful leisure activities	Improved ensuring of children security	Improved learning conditions for children	Improved ensuring of living conditions for children	Appearing additional operational costs or their savings	Total
1	6	6	2	2	0	0	16
2	0	6	2	2	0	0	10
3	2	4	2	6	0	-1	13
4	0	0	6	2	0	-1	7
5	4	0	0	0	6	3	13

After combining the indicators of cost-effectiveness analysis by using SAW formula, it can be stated that the main goal of the public project is best satisfied by Option 1 – renovation of a sport hall and acquisition of sport gear which leads to the conclusion that the most efficient investment in the CCH is in the implementation of Option 1.

In summary, the evaluation of the CCH public project using cost-effectiveness analysis made it possible to incorporate into evaluation various indicators for social benefits by ranking them according to the priorities of goals; whereas, the evaluation without combining indicators is complex and investment decision-making is problematic. A cost-effectiveness analysis is incomplete and non-concrete, and it is suitable for making simple management decision but is not the best method to evaluate complex public projects.

Conclusions

1. The main problem encountered during the valuation of public projects – how to measure social benefits for the public created by them. A cost-benefit analysis most commonly used for the valuation of public projects is criticised for its deviation from the main goals of a project – creation of social benefits for the public and valuation of only measurable benefits. Furthermore, it is important to take into account the long time horizon of investment which even extends beyond the period of one generation. The peculiarities of public projects influence their evaluation.

2. Public projects can also be evaluated using the cost-effectiveness analysis which covers the analysis of project goals, search for alternative ways to achieve the goals, estimation of the costs incurred and benefits generated by investment alternatives, and the comparison of investment alternatives. The cost-effectiveness analysis has the following advantages: a) helps define and understand project goals and reveal the most efficient method to achieve them; b) it identifies only those social benefits for a target group which are linked with the project goals; and c) social benefits can be expressed using indicators measured by different units of measurement. The essential advantage of cost-effectiveness analysis lies in the fact that project evaluation is not separated from project goals, which ensures the justification of the selected evaluation indicators, a direct relationship with the satisfaction of priority needs of a target group. This is the key advantage of cost-effectiveness analysis over a traditional cost-benefit analysis. Limitations of cost-effectiveness analysis: a) the number of indicators is limited, and thereby, selected indicators do not always express the entire social benefits

created by a public project; b) a large number of evaluated indicators produces a complex combination which is incomparable with another relevant option; c) the influence of time on value is disregarded; and d) no ways of how to combine benefit indicators are presented.

3. Taking into account the advantages and limitations of cost-effectiveness analysis, the evaluation of five investment options for improving living and learning conditions for children was carried out with regard to the public project of the CCH. Taking into account project goals, options for their implementation were developed and evaluation indicators were selected. Under the limited sources of finance the most efficient investment option was selected that will allow for achieving the project goal. While carrying out project evaluation complex combinations of indicators for evaluating investment alternatives were obtained which precluded the possibility of comparing alternatives with each other, and thus, indicators were combined using a score scale and SAW method. Limitation of cost-effectiveness analysis can be eliminated using other methods of multicriteria valuation. The material of research detailed in the paper is useful for the improvement of public project valuation methods and their integration or the development of new valuation methods.

Bibliography

1. Bateman, I. J.,Willis, K. G. (Eds.) (1999). Valuing Environmental Preferences. Oxford.
2. Bleichrodt, H., Quiggin, J., (1999). Life-Cycle Preferences over Consumption and Health: When is Cost-Effectiveness Analysis Equivalent to Cost-Benefit Analysis? *Journal Health Economic* 18 (6), pp. 681–708.
3. Boardman, A., Greenberg, D., Vining, A., Weimer, D. (2006). Cost-Benefit Analysis: Concepts and Practice. Upper Saddle River, NJ: Prentice Hall.
4. Brukas, V., Thorsen, B. J., Helles, F., Tarp, P. (2001). Discount Rate and Harvest Policy: Implications for Baltic Forestry. *Forest Policy and Economics*, 2, pp. 143-156.
5. Ernst, R. (2006). Indirect Costs and Cost-Effectiveness Analysis. *Value in Health*, 9(4), pp. 253-261.
6. Glazer, A., Kanniainen, V., Niskanen, E. (2002). Bequests, Control Rights, and Cost–Benefit Analysis. *European Journal of Political Economy*, 19, pp. 71–82.
7. Ginevicius, R., Podvezko, V. (2008). Daugiakriterinio vertinimo taikymo galimybes kiekybiniam socialiniu reiskiniu vertinimui. (A Feasibility Study of Multicriteria Methods' Application to Quantitative Evaluation of Social Phenomena). *Verslas: teorija ir praktika, (Business: Theory and Practice),* 9(2), pp. 81–87.
8. Gollier, Ch. (2002). Discounting an Uncertain Future. *Journal of Public Economics*. 85, pp. 149–166.
9. Gollier, Ch. (2010). Ecological Discounting. *Journal of Economic Theory*, 145, pp. 812–829.
10. Hanley, N., Spash C. (1993). Cost-Benefit Analysis and the Environment. Cheltenham: Edward Elgar.
11. Heikkinen, T., Pietola, T. (2009). Investment and the Dynamic Cost of Income Uncertainty: the Case of Diminishing Expectations in Agriculture. *European Journal of Operational Research,* 192, pp. 634–646.
12. Hepburn, C. (2006). Valuing the Far-off Future: Discounting and its Alternatives. In: Atkinson, G., Dietz, S., Neumayer, E. (Eds.), Handbook of Sustainable Development. Edward Elgar, Cheltenham, UK, forthcoming.
13. Hepburn, C.J., Koundouri, P. (2007). Recent Advances in Discounting: Implications for Forest Economics. *Journal of Forest Economics*, 13, pp. 169–189.
14. Jacoby, H. G. (2000). Access to Markets and the Benefits of Rural Roads. *The Economic Journal*, 110, pp. 713–737.
15. Medaglia, A. L., Hueth, D., Mendieta, J. C., Sefair, J.A. (2008). A Multiobjective Model for the Selection and Timing of Public Enterprise Projects, *Socio-Economic Planning Sciences* 42, pp. 31–45.
16. Nyborg, K. (2000). Project Analysis as Input to Public Debate: Environmental Valuation Versus Physical Unit Indicators. *Ecological Economics,* 34, pp. 393–408.
17. Parks, S., Gowdy, J. (2013). What have Economists Learned about Valuing Nature? A Review Essay, Ecosystem Services, 3, pp. e1-e10.
18. Pearce, D.W., Atkinson, G, Mourato, S. (2006). Cost-Benefit Analysis and the Environment: Recent Developments. Paris: Organ. Econ. Co-Op. Dev.

19. Porter R.S., Walsh M.R. (1978). Cost - Effectiveness Analysis in Practice: a Case Study of Domestic Water Supplies in an African Country. *World Development*, 6(2), pp. 195-208.

20. Price, C. (2010). Low Discount Rates and Insignificant Environmental Values. *Ecological Economics*, 69, pp. 1895–1903.

21. Saez, C. A., Requena, J. C. (2007). Reconciling Sustainability and Discounting in Cost–Benefit Analysis: a Methodological Proposal. *Ecological Economics*, 60, pp. 712-725.

22. Simic, N., Vratonjic, V., Beric, I., (2011). Methodologies for the Evaluation of Public Sector Investment Projects. Megatrend Review 8(1), pp. 113-130.

23. Sugden, R., Williams A. (1978). The Principles of Practical Cost-Benefit Analysis. Oxford: Oxford Univ. Press.

24. Thaler, R., Sunstein, C., (2008). Nudge: Improving Decisions About Health, Wealth, and Happiness. Yale University Press, New Haven.

25. Van de Walle, D. (2002) Choosing Rural Road Investments to Help, The World Bank, Washington, DC, USA, S0305-750X(01)00127-9.

ANALYSIS OF THE SOCIO-ECONOMIC VALUE OF FORESTS OWNED BY THE STATE AND OTHER OWNERS IN KURZEME AND VIDZEME STATISTICAL REGIONS

Zinta Zalite[1], MBA; **Anita Auzina**[2], Dr.oec., associate professor; **Toms Zalitis**[3], Dr.silv. [+]

[1, 2]Faculty of Economics and Social Development, Latvia University of Agriculture

[3] Latvian State Forest Research Institute "Silava"

Abstract. Latvia is divided into six statistical regions. The total area of this country is 64.6 thousand km^2. The most important natural resource for the economy of Latvia is forests. According to the data of the Central Statistical Bureau of Latvia, the total forested area is 3.5 million hectares, covering 56.9% of Latvia's territory. Vidzeme region and Kurzeme region are the most forested regions in Latvia. Forests cover 871.5 thousand ha in Vidzeme region and 752.3 thousand ha in Kurzeme region. Therefore, the authors of the paper decided to study those regions deeper. The socio-economic value of forests in Vidzeme region is EUR 1.27 billion, while in Kurzeme region – EUR 1.11 billion. Of all Latvia's forests, 50.3% are state-owned and the remaining 49.7% are under different ownership.

Key words: regional analysis, forest socio-economic value, National Forest Inventory.
JEL code: Q23

Introduction

Latvia is the fourth most forested country in Europe. Forests for Latvia's economy are a very important resource; thus, a calculation of forest value is needed. Nowadays, a social and ecological evaluation of forest resources takes as important place as an economic evaluation. The authors used the socio-economic evaluation method for calculating the forest value in Latvia.

Latvia is divided into six statistical regions. The authors decided to study deeper two regions, which are the most forested – Vidzeme region and Kurzeme region. Kurzeme region is located in the Western part of Latvia, the size of territory – 13.6 thousand km^2 but Vidzeme region – in the North-eastern part of Latvia, the size of territory – 15.2 thousand km^2 (Statistics of Regions..., 2013). These regions are ones of the largest regions by size in Latvia. The total area of Latvia is 64.6 thousand km^2.

Of all Latvia's forests, 50.3% are state-owned. The joint stock company "Latvia's State Forests" is the manager of these forests. It is an enterprise entirely owned by the state of Latvia. The remaining 49.7% are under different ownership, like private and legal forest owners, municipalities and scientific forests (Latvia's State Forests…, 2011).

The aim of this study is to calculate the socio-economic value of forests owned by the state and other owners in the most forested statistical regions – Kurzeme and Vidzeme and to compare them. To accomplish it, the following tasks were proposed:

[+] Corresponding author. Tel.: + 37126154140
E-mail address: zalitezinta@gmail.com

1) to explore a forest socio-economic evaluation methodology;
2) to calculate the socio-economic value of forests owned by the state and other owners in Kurzeme and Vidzeme regions;
3) to compare the forests' socio-economic value in Kurzeme region and Vidzeme regions.

The monographic descriptive method and the analysis and synthesis methods are used in the research to calculate the socio-economic value of forests owned by the state and other owners in the most forested statistical regions – Kurzeme and Vidzeme – as well as theory aspects and problem elements. The empirical research method is used to develop general statements from separate facts or to determine regularities. The logical construction and interpretation methods are used for developing conclusions. Legislative acts of the Republic of Latvia, scientific publications, other relevant literature, and internet resources were used in the study.

Research results and discussion

Materials and methods

The authors used a methodology developed by Dr.hab.silv. Peteris Zalitis for calculating the forest socio-economic value in regions. The authors adapted this methodology for using the National Forest Inventory (NFI) data. The NFI data have a very high scientific value, as they provide in-depth information on Latvia's forest resources.

The two most important components of forest ecosystem regarding the forest socio-economic value are forest land and forest stand values: MV=ZV+KV, where MV– forest value, ZV – forest land value, and KV – forest stand value.

To calculate the forest land value, the following variables are used: ZV_{ekon} x K_{ekol} x K_{soc}, where ZV_{ekon} - forest land economic value, K_{ekol} - ecological value of forest land, and K_{soc} - social value of forest land. ZV_{ekon} – the forest type's quality assessment has been used for calculating the forest land economic value. It has been taken from the Cadastral Valuation Regulations in Latvia. Forest stand growth in different forest types has been used as a forest land evaluation indicator. K_{ekol} – a correction coefficient; it characterises the forest dominant ecological function. Environmental experts' evaluation has been used as well. K_{soc} – the social value of forest land illustrates anthropogenic load and it is connected with forest localisation relative to villages and traffic lanes. The Cadastral Valuation Regulations were also used in the study.

The current standing volume, the target standing volume, the ratio of the values of wood-produced oxygen and timber products and the correction coefficient are used to calculate the forest stand value. The standing volume is taken from the National Forest Inventory, the target standing volume – from a scientific publication by the methodology developer. The ratio of the values of wood-produced oxygen and timber products is calculated by multiplying the forest stand value by the oxygen market value and one cubic metre of volume of wood-produced oxygen.

Overall, the following equation is used to calculate the forest value:

(Eq. 1)

$$\mathrm{MV\ (points)} = \mathrm{ZV_{ekon}} \times \mathrm{K_{ekol}} \times \mathrm{K_{soc}} + \frac{\mathrm{V_{fakt}}}{\mathrm{V_m}} \times \mathrm{ZV_{ekon}}\ (1 + R \times i_v)$$
$$= ZV_{ekon} \left[K_{ekol} \times K_{soc} + \frac{V_{fakt}}{V_m} (1 + R \times i_v) \right]$$

where:

ZV_{ekon} – economic value of forest land;

K_{ekol} – ecological value of forest land;

K_{soc} – social value of forest land;

V_{fakt} – current standing volume;

V_m – target standing volume;

R – ratio of the values of wood-produced oxygen and timber products;

i_v – correction coefficient.

Firstly, the forest land value and afterwards the forest stand value were calculated for the estimation of the forest socio-economic value. Both values were expressed in points per 1 ha. For transforming points to euro, the following equation is used:

(Eq. 2)

$$\mathrm{MV\ (EUR)} = (\mathrm{KV_{vid}} + \mathrm{MV_{vid}}) \times 5.28 \times 3742 \times 345$$

where:

KV_{vid} – forest stand average value;

MV_{vid} – forest land average value;

5.28 – value of one hectare points in EUR set by the Cabinet Regulations;

3742 – total amount of sample plots;

345 – ha, the area which represents 1 sample plot (Zalitis P., 2001).

Data from the NFI were used because it is a new way for obtaining information about forests in Latvia. One can obtain two types of information there: first, statistical reports on state forest resources, and second, a large database for a more in-depth research on forest stand or tree level. The first cycle of the NFI was scheduled for 2004-2008, with the second cycle consisting of repeated measurements scheduled for 2009-2013. The second cycle of measurements started in 2009, providing information about the dynamics of development, deadwood structure and cuttings at stand, and even at tree level.

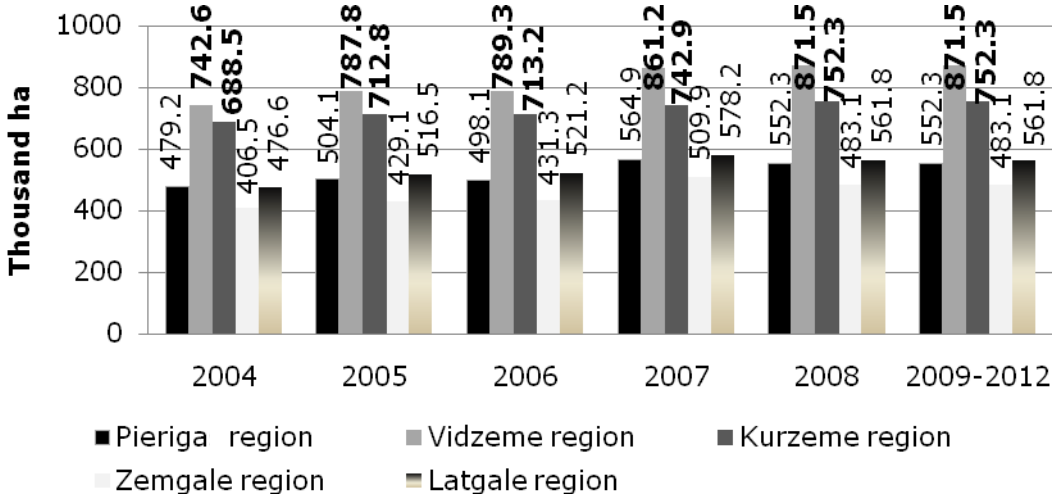
Only data from 2005, 2006 and 2007 have been used, since the second cycle of measurements has not been finished yet (National Forest Inventory ..., 2009). The first year was excluded, because not all sample plots were measured and it is not a representative one. Also the last year of the first

measurement cycle was excluded. Sample plots with different data discrepancies have been excluded from the study as well.

The authors used correlation analysis to define how indicators and values are influencing each other.

Research results and discussion

Fifty point three percent of all Latvia's forests are state-owned and the remaining 49.7% are under different ownership – municipalities, private forest owners, protected forests, and others. Historically, this percentage distribution has changed with the political situation and the powers. The percentage of forest land owned by the state has decreased by 34%, while the share of other forests has increased because of historical events. The total area of forested land has grown by 53%. According to the Forest Fund, in 1921 Latvia had 1.8 million hectares of forest, while, accounting to the forest statistical inventory data for 2011, forests cover 3.5 million hectares of the country's territory. It means that there are 1.5 hectares of forest per inhabitant in Latvia, almost twice as much as at the time of the first Republic of Latvia. The total area of forests in Latvia has increased from 0.9 hectares to 1.5 hectares per capita (Zalite Z., Auzina A. 2013).



Source: authors' construction based on the Central Statistical Bureau of Latvia, 2004 - 2012

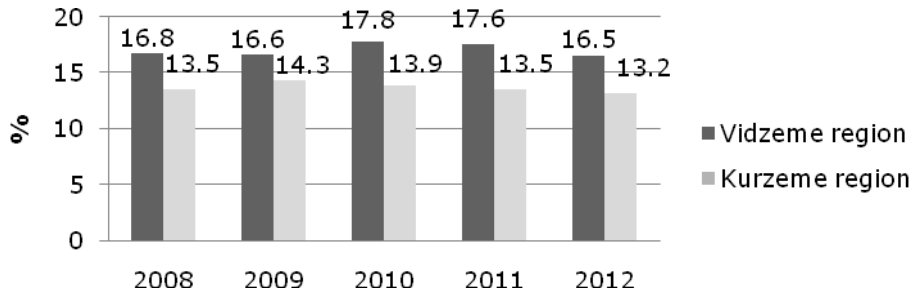
Fig. 1. **Forest area in statistical regions from 2004 to 2012, thousand ha**

The forest area was increasing almost in all the regions from 2004 to 2012 (Figure 1). Vidzeme region is one of the most forested regions in Latvia. Year by year, the forest area was increasing, from 742.6 thousand ha in 2004 to 871.5 thousand ha in the year 2012. Zemgale region is a region with less forests. The forest area in Zemgale region was almost twice lower than in Vidzeme region in 2012. Latgale region is the region where its forest area was a little bit decreasing, i.e. the forest area decreased by 16.4 thousands ha from 2007 to 2012. From all the regions, the most forested regions are Kurzeme region and Vidzeme region. In 2012, the forest area covered 817.5 thousand ha in Vidzeme region and 752.3 thousand ha in Kurzeme region (Forest Area..., 2013).

Forests for Latvians provide many important things – firstly, forest is the most important natural resource for the economy of Latvia. In 2012, the export value was EUR 1.7 billion; the forest sector's export contribution to the total export balance was 17%; the forest sector's share of gross domestic product stood at 6.1% (Forest Sector Export..., 2013). The export value is increasing together with the forest area, respectively. It was EUR 1.1 billion in 2005. The export share in the country's export was 35%, it dropped for 18 percentage points in 2005. The export share of gross domestic products increased by 1.9 percentage points. In 2005, the export share of gross domestic product stood at 4.2% (Klauss K., 2011). A very good tendency can be observed – the forest sector export value and its share of gross domestic product have been increasing from 2005.

In 2012, 73.3 thousand or 8.4% of employees were working in forestry, agriculture, and fishery. This number has dropped by 14.6 thousand since 2008; despite that the employment rate is an important indicator for sustainable forest management. For comparison, 18.7% of all Latvia's employees work in the trade, accommodation, and food service sectors, which is in the first place among all sectors. The forest sector takes the fifth place in 2012.

More employees are working in Vidzeme statistical region (Figure 2). In 2012, 16.5% of employees were working in forestry, agriculture and fishery in Vidzeme region. The year with the highest employee number was 2010, when 17.8% were employed. The largest difference between employee numbers in the statistical regions was in 2011. In Vidzeme statistical region, 17.6% were working in forestry, agriculture and fishery, while in Kurzeme statistical region – 13.5% (Employees in Forestry..., 2013).



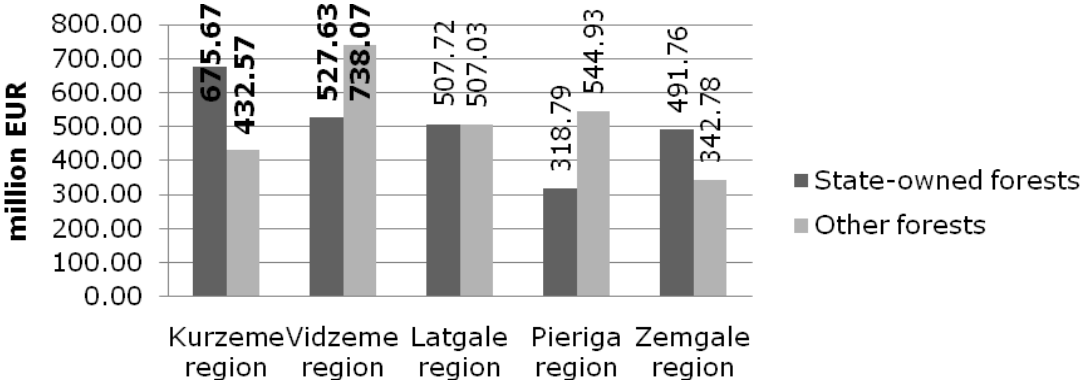
Source: authors' construction based on the Central Statistical Bureau of Latvia, 2004 - 2012

Fig. 2**. Share of employees in forestry, agriculture and fishery in Vidzeme and Kurzeme statistical regions, 2008 - 2012, %**

Secondly, among other European countries, Latvia is mentioned as a country with high natural diversity; endangered plants and animal species are maintained in a reasonable and sustainable way. None of tree species have perished from Latvia's forests in recent centuries due to the economic activity. In Latvia's forests, the diversity of tree species mixture is very high within the stands and also soil structure. Biodiversity is higher than in the temperate climate zone in the Central part of Europe and the Southern part of the Scandinavian Peninsula (Environment Plan..., 2011). The area covered with forests, their qualities and geographical localisation defines Latvia belonging to the regions where the forest sector gives a significant input into the country's economy.

Thirdly, Latvia is one of those rare countries in the world where forestry's CO_2 sequestration is much higher than the overall amount of harmful emissions. Fourth, the forest recreational territory takes 293 000 ha or 8% of the total forest area in Latvia. Bird-watchtowers, paths, cultural nature objects, places for picnics, and many other infrastructural objects are available in Latvia's forests. The joint stock company "Latvia's State Forests" pays special attention to the establishment of that type of objects in their managed forests. Every Latvian resident can use all these objects for free. A price cannot be determined for emotional satisfaction for time spent in forest. Also, non-timber forest product picking for most of Latvian citizens is just a hobby not a source of income. Theoretically, it is possible to evaluate the value of non-timber forest products. The Ministry of Agriculture has evaluated the value of picked non-timber forest products in Latvia's forests and the value was EUR 130 million in 2010. A very small amount of products was sold on the market and it is wrong to say that they were incomes from forest management. This value of non-timber forest products is just a visualisation and one more time confirms the social significance of Latvia's forests (Forest Sector in Numbers, 2013).

The previously mentioned facts confirm the economic, social, and ecological importance of Latvia's forests which ensures sustainable regional development. According to calculations done by the authors, the socio-economic value of Latvia's forests was EUR 5.1 billion in the first national forest inventory cycle. State-owned forests' socio-economic value is EUR 2.52 billion and the value of forests owned by other owners is EUR 2.58 billion during the first measurement cycle.



Source: authors' construction

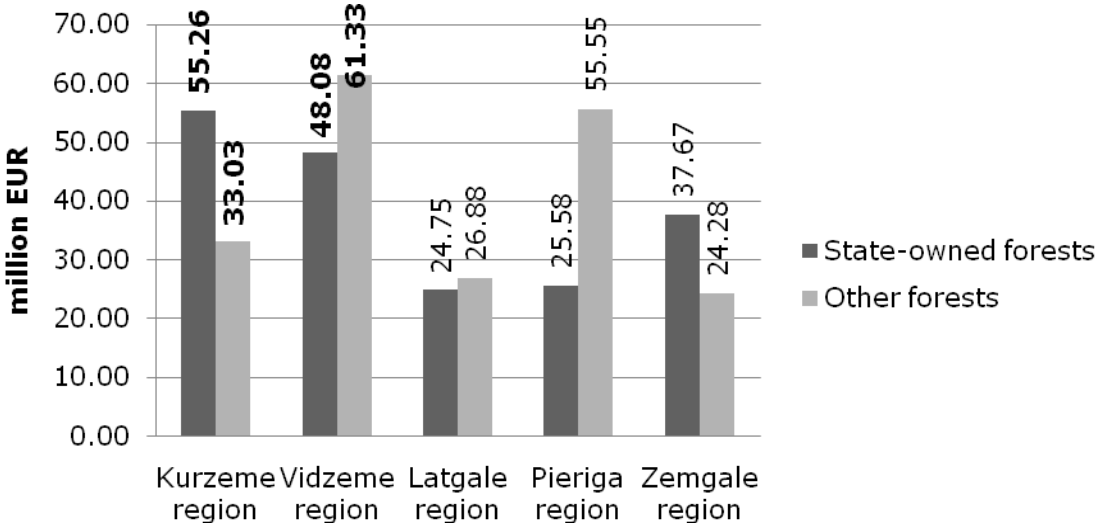
Fig.3**. Socio-economic value of state-owned forests and other forests in the regions, from 2005 to 2007, EUR million**

Among all the statistical regions in Latvia, the most valuable forests are located in Vidzeme region, the North-eastern part of Latvia in the first national forest inventory cycle (Figure 3). The total forest value is EUR 1.27 billion. State-owned forests' value is EUR 527.63 million, while other forests' value is EUR 210.44 million greater. The total forest value in Kurzeme region, the Western part of Latvia, is EUR 1.1 billion. State-owned forests' value is EUR 675.67 million, while other forests' value is EUR 4263.57 million. High forest value is calculated in Latgale region, the Eastern part of Latvia. Other forests' value is EUR 507.03 million, while state-owned forests' value is EUR 507.72 million. Most valueless state-owned forests are located in Pieriga region, the central part of Latvia but most valueless other forests are

located in Zemgale region, the South-western part of Latvia. Riga region has been excluded, because no state-owned forests are located in this region.

The fact that the most valuable forests are located in Kurzeme and Vidzeme regions is logical, because forests cover large areas of the region's lands. Their share of all lands are 51.7%, agricultural land takes 34% of the total area. Forests cover 29.2% of all area in Kurzeme region but agricultural lands - 63.3% (Latvijas regionu ekonomikas..., 2010-2011).

A forest stand value and a forest land value are two important components in the socio-economic value equation; thus, they will be analysed separately for Kurzeme region and Vidzeme region.



Source: authors' construction

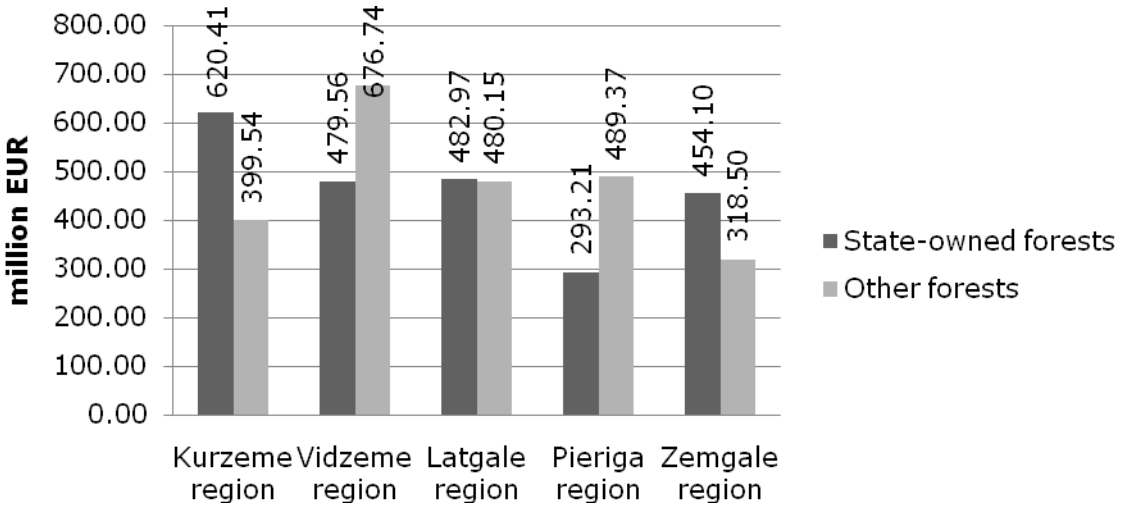
Fig. 4**. The highest forest land values in the regions, 2005 – 2007, EUR million**

The most valuable forest land, worth of EUR 109.51 million, is in Vidzeme region (Figure 4). The state-owned forest land value is EUR 48.08 million. Other forests' value is greater by EUR 13.26 million. An opposite situation is in Kurzeme region. State-owned forests are more valuable than other forests. Other forests' value is EUR 33.03 million. State-owned forest's value is 40% greater.

A correlation analysis confirms the assumption that the ecological value affects the forest land value more than other values and indicators ($r=0.885$ with $\alpha = 0.000$). An ecological value represents the dominant function of forest - either it is a protected forest, a forest in a town, or an economically managed forest. The ecological value is higher for protected forests but economically managed forests have the lowest evaluation. Protected forests ensure high biodiversity, endangered tree species are growing there, and they can be used for recreational purposes as well. Forest felling in protected areas is prohibited for commercial purposes, thereby, no economic benefit can be expected from these territories.

According to the data analysis, the most valuable forest stands are in Vidzeme region, i.e. EUR 1.16 billion, state-owned forests' stands are worth of EUR 479.56 million, while other forest stands are worth of EUR 676.74 million (Figure 5). The second most valuable forest stands are located in Kurzeme region.

Forest stands there are worth EUR of 1.02 billion. State-owned forest stands are more valuable than other forest stands. The same situation was for forest land. The state-owned forest value is EUR 620.41 million but other forests' value is EUR 399.54 million.



Source: authors' construction

Fig. 5. **The highest forest stand values in the regions, 2005 – 2007, EUR million**

Out of all the constituent indicators, the current standing volume correlates most with the forest stand value. There is a strong positive correlation between the forest stand value and the current standing volume (r=0.911 with α = 0.000). A higher current standing volume ensures a higher forest stand value. Quality forest stands bring a higher economic benefit to the forest owner. Economically valuable trees should be planted as dominant species and species of no significant value should be replaced to get the highest economic benefit from the forest. Valuable species are: common Norway spruce (*Picea abies Karst*.), Scots pine (*Pinus sylvestris L*.), Silver birch (*Betula pendula Roth*), Aspen (*Populus tremula L*.), Common alder (*Alnus glutinosa Gaerth*), Common oak (*Quercus robur L*.), and European ash (*Fraxinus excelsior L*.). As species of no significant value the authors mention species that cannot be sold for profit, for example, Goat willow (*Salix caprea*).

Overall, the most valuable forests are located in Vidzeme region. The second most valuable forests are located in Kurzeme region. Great forest values are also observed in the other statistical regions in Latvia. The forest socio-economic evaluation method could be used for evaluating a forest value and defining the lowest and the highest indicators. It is a good method for having an overall view of forest condition and one of the conditions for sustainable regional development.

Conclusions

1. Forests are the most important natural resource for the economy of Latvia. In 2012, the export value was EUR 1.7 billion and 8.4% of employees were working in forestry, agriculture and fishery sectors.

2. The forest socio-economic value represents the forest social, ecological, and economic value of forest. Latvia's forests' socio-economic value is EUR 5.1 billion.

3. The most valuable forests are located in Vidzeme region. The forest socio-economic value is EUR 1.27 billion. The forest stand value and the forest land value are the highest as well. In Vidzeme region, 16.5% of employees are working in forestry, fishery, and agriculture.

4. Out of all the constituent indicators, the current standing volume correlates most with the forest stand value. There is a strong positive correlation between the forest stand value and the current standing volume ($r=0.911$ with $\alpha = 0.000$).

5. Out of all the constituent indicators, the ecological value of the forest affects forest land most. There is a strong positive correlation between the value of forest land and the ecological value of forest land ($r=0.885$ with $\alpha = 0.000$).

Proposals

1. Forest owners should use the method for forest socio-economic evaluation. It helps evaluate all basic forest functions and distinguish the strengths and weaknesses in forest property. The forest can be used not only for forest felling but also for recreational purposes. Economic benefit could be gained from forests for recreational purposes with a good business plan.

2. The method for evaluating the socio-economic value could be the basis for developing a programme for modelling and estimating the highest socio-economic value of a forest stand and the most profitable level based on certain indicators to be included into the programme, taking into consideration the ecological and social functions of the forest.

Bibliography

1. Employees in Forestry, Agriculture and Fishery in Vidzeme and Kurzeme Statistical Regions, 2008-2012. Central Statistical Bureau of Latvia. Retrieved: http://www.csb.gov.lv/statistikas-temas/nodarbinatiba-un-bezdarbs-datubaze-30033.html. Access: 02.01.2014.
2. Environment Plan of "Latvia's State Forests" (2011). Retrieved: http://www.lvm.lv/files/text/VAP-2007%20-2012.pdf Access: 22.05.2013.
3. Forest Area in Statistical Regions from 2004 to 2012. Central Statistical Bureau of Latvia. Retrieved: http://www.csb.gov.lv/en/statistikas-temas/forestry-database-30730.html. Access: 05.06.2013.
4. Forest Sector Export from 2004 to 2012. Central Statistical Bureau of Latvia. Retrieved: http://www.csb.gov.lv/en/statistikas-temas/foreign-trade-database-30721.html. Access: 22.12.2013.
5. Klauss, K. (2011). The Forest Sector 20 Years of Latvian Independence. Retrieved: http://www.zm.gov.lv/index.php?sadala=2059&id=12129. Access: 02.05.2013.
6. Latvijas regionu ekonomikas attistibas perspektivas un virzieni 2010-2011 (Economic Development Prospects and Directions of Latvian regions). Retrieved: http://www.varam.gov.lv/lat/publ/publikacijas/reg_att/. Access: 05.01.2014.

7. Latvia's State Forests. Annual Reports from 2000 to 2011. Retrieved: http://www.lvm.lv/lat/lvm/finansu_informacija/. Access: 27.12.2012.
8. National Forest Inventory Report (2009). Salaspils, p. 8.
9. Statistics of Regions in Latvia (2013). Retrieved: http://www.csb.gov.lv/dokumenti/par-statistiskajiem-regioniem-28607. Access: 05.01.2014.
10. Zalite, Z., Auzina, A. (2013). The Development of Forest Property Rights from Early 20th Century to Modern Times. Economic Science for Rural Development. Proceedings of the International Scientific Conference, ISSN 1691 – 3078, No 31, Jelgava, pp. 184 - 189
11. Zalitis, P. (2001). The Economic, Ecological and Social Value of Latvia's Forests as an Irreplaceable Biosphere Constituent. Mezzinatne, Volume 11, Salaspils. pp. 125 – 151

IDENTIFYING TRADED CLUSTER INDUSTRIES IN LATVIA

Zanete Garanti[+], Mg.oec., lecturer

[1] Faculty of Economics and Social Development, Latvia University of Agriculture, Latvia

Abstract. Cluster based entrepreneurship is an important tool to foster economic growth of companies and regions. Recent studies show a strong positive link between the existence of clusters and productivity, efficiency, innovative capacity, and overall competitiveness of the companies that leads to competitive regions. Considering the benefits of regional clusters, support for cluster initiatives through special programmes and other tools supporting cluster formation, is available in Latvia from 2009. The initial stage of regional cluster development is concentration of the economic activity in certain regions; thereby, the author of this article looks at economic activities at regional level and finds those industries that have potential forming regional clusters. Economic activity, both in general and specific industries, has a tendency to concentrate in certain geographic areas. Findings show that all industries are concentrated in Latvia, with an average Gini coefficient being equal to 0.54. Location Gini calculation allows the author to group industries into local, resource dependent, and traded cluster industries. The main focus of the article is put on traded cluster industries that locate in certain regions owing to regional attractiveness and competitiveness, thus, forming regional business clusters. Seven cluster categories with 47 traded cluster industries are identified of which 49% are manufacturing and 51% are service industries. Twenty-none per cent of all enterprises are engaged in these industries in Latvia but they employ 40% of working population; 40% of net turnover of enterprises is concentrated and 40% of nonfinancial investment are attracted there. Available cluster support is also concentrated in these industries.

Key words: regional clusters, cluster development.
JEL codes: L16, R12, O18

Introduction

Michael E. Porter (1990, 1998a, 1998b, 1998c, 2000, 2003) introduced clusters as a tool for competitiveness, although, the cluster concept is known since the work of Marshall in the 1920s where he discussed the importance of industrial districts. Regional clusters can be defined as the combination of five dimensions – single sector enterprises that cooperate and compete; supportive enterprises from a wide range of sectors; public and government institutions, interested in economic development of the sector and region; other institutions, such as research, educational, financial, and other ones; and the fifth are the regional dimension which combines all the four above-mentioned dimensions into one region (Garanti Z., 2013a; Garanti Z., Zvirbule-Berzina A., 2013a, 2013b). Regional clusters promote regions' growth and development (Garanti Z., Zvirbule-Berzina A., 2013a, 2013b) by increasing firms' efficiency and productivity, innovation capacity, and competitiveness. There are several methods developed to identify regional clusters, while for the most of them (Porter E.M., 2003; Solvell O., et al., 2003; Szanyi

[+] Corresponding author. Tel.: + 90 533 850 5809; fax: + 90 392 725 7 999
E-mail address: zhanette@gmail.com

M., 2012; Szanyi M., et al., 2010) the starting point is identifying industries that have potential forming regional clusters. In the present research, the author uses location Gini coefficients developed by Paul Krugman (1991). The main idea behind this method is measuring regional inequalities in distribution of the workforce, thus, identifying agglomeration of companies that is a starting point of clusters (Saxenian A., 1994) that locate in a specific region (Marshall A., 2009; Chatterjee S., 2003; Gordon I.R., McCann P., 2000; Xiangan L., Yingchuan Y., 2005; Boja C., 2011). A cluster is an agglomeration in which special cooperation ties emerge among the agglomeration's companies and institutions (Porter E.M., 1998a; Krugman P., 1991; Palacios J., 2005; Malmberg A., Solvell O., Zander I., 1996).

Regional clusters are promoting a steady growth and reducing regional inequalities (Porter E.M., 2003; Fritsch M., 2008; Baptista R., Escaria V., Madruga P., 2008; Rocha H., Steinberg R., 2005; Romero-Martinez A.M., Montoro-Sanchez A., 2008, Delgado M., Porter E.M., Stern S., 2010, 2011). The important role of regional clusters in a regional economy has promoted the research on the industries forming regional clusters. The aim of the research is to identify those industries in Latvia that have potential forming regional clusters. The following research tasks are set up to achieve the aim:

4) to group industries into local, resource dependent, and traded cluster industries;
5) to analyse the impact of traded cluster industries on the national economy.

The research materials and methods include data of the Central Statistical Bureau (CSB) and both national and foreign research papers. The author employed the monographic method, analysis and synthesis as well as the calculation of location Gini coefficients to group industries into local, resource dependent, and traded cluster industries. Time series analysis was employed to determine the impact of traded cluster industries on the economy.

Research results and discussion

Methodology

The author measures geographic concentration of economic activities by using the location Gini coefficient (G). The location Gini coefficient is a modification of the Gini coefficient method in which individuals are replaced with regions and their weights are set based on the proportion of a region in total unemployment (Spiezia V., 2002). The location Gini coefficient method was developed by Paul Krugman (Krugman P., 1991), and this method is a modification of the traditional Gini index. The location Gini coefficient is widely used in research on concentration and unequal location of industries in regions both by researchers (Shelburne R.C., Bednarzik R.W., 1993; Guillain R., Le Gallo J., 2007; Amiti M., 1998) and by international institutions such as the Food and Agriculture Organisation (FAO) (Bellu L.G., Liberati P., 2006), the Organisation for Economic Cooperation and Development (Spiezia V., 2002, 2003). The critique of this method is based on the fact that the location Gini coefficient attempts to eliminate the difference between inequality and concentration, even though these are very different terms (Arbia G., 1989), besides, a small sample of location data can lead to imprecise results (Deltas G., 2003). The researchers who used the Gini coefficient in their research came to a conclusion that all industries, to a greater or smaller extent, were concentrated. Based on a methodology developed by scientists (Krugman P., 1991; Shelburne R.C., Bednarzik R.W., 1993; Bellu L.G., Liberati P., 2006), the location Gini coefficient is calculated as follows:

1) the proportion of every region's unemployment relative to total unemployment:

$$S_i = \sum_j E_{ij} / \sum_i \sum_j E_{ij} \quad (1)$$

2) the proportion of a region's employment for every industry:

$$S_{ij} = E_{ij} / \sum E_{ij}, \quad (2)$$

where E- number of jobs,

i- region;

j- industry.

3) the coefficient R is calculated for every industry:

$$R = S_{ij} / S_i \quad (3)$$

4) industries are arranged in ascending order based on the coefficient R value;
5) Si is calculated as a cumulative value p;
6) Sij is calculated as a cumulative value q;
7) by depicting p and q values graphically, a Lorenc curve is obtained. In the case of equal distribution of employment, the Lorenc curve will match a 45 degree angle. The more unequally employment is distributed, the more the Lorenc curve moves away from the 45 degree angle;
8) the location Gini coefficient may be obtained from the Lorenc curve:

$$G = 1-2Z, \quad (4)$$

where Z- a concentration area under the Lorenc curve.

9) the Gini index may be calculated as follows:

$$G = 1 - \sum[(q_i + q_{i-1})(p_i - p_{i-1})] \quad (5)$$

The developer of the method, Paul Krugman (Krugman P., 1991), points out that the location Gini coefficient ranges from 0 to 1. If employment in every region is evenly proportional to overall employment in the particular industry, the industry does not tend to concentrate in a certain region and the coefficient will be equal to 0. If the industry's employees are located only in one region, the coefficient will be equal to 1, indicating full equality. Porter assumed a Gini coefficient of 0.3 to be a sufficient indication of concentration that indicates traded cluster industries (Porter E.M., 2003).

Industry grouping

All industries in Latvia are somewhere concentrated. The location Gini coefficients computed for groups of industries are presented in Table 1.

The average location Gini coefficient for industries in Latvia is equal to 0.54 (Table 1), which indicates high inequality for industries' employment across the regions. The location Gini coefficient indicates industrial differences which affect the formation of clusters. M. E. Porter (2003), O. Solvell (2003), and Z. Garanti (2013b) have discussed that location Gini coefficients clearly show main trends in industry distribution:

- **some industries are distributed proportional to population,** thus, ensuring local demand for goods and services. These industries include retail trade, health care, water supply, education, and others. These local industries do not have an aim to form clusters;

- **some industries locate close to natural resources.** According to Porter (2003), there are resource dependent industries in which businesses are located where necessary resources are available, for instance, part of agriculture, fishery, mining, logging, and quarrying. These industries do not form clusters themselves but provide resources to cluster industries;

Table 1

Location Gini coefficients for industries in 2012

Gini value range	Industries	Average Gini values
Low Gini values (G < 0.5)	Public administration and defence; compulsory social security	0.26
	Education	0.26
	Human health and social work activities	0.30
	Agriculture, forestry and fishing	0.37
	Construction	0.40
	Electricity, gas, steam and air conditioning supply	0.41
	Water supply, sewerage, waste management and remediation activities	0.43
Average Gini values (5 < G > 7)	Manufacturing	0.50
	Wholesale and retail trade; repair of motor vehicles and motorcycles	0.50
	Arts, entertainment and recreation	0.58
	Other service activities	0.58
	Real estate activities	0.62
	Professional, scientific and technical activities	0.62
	Administrative and support service activities	0.65
High Gini values (G > 7)	Mining and quarrying	0.70
	Transportation and storage	0.70
	Accommodation and food service activities	0.73
	Information and communication	0.73
	Financial and insurance activities	0.79

Source: author's calculations, 2013

- **some industries are located in the regions because of the competitive advantage.** There are enterprises located in certain regions not owing to the availability of resources, but owing to their competitive advantages. According to Porter (2003) and Solvell (2003), these are called traded cluster industries. These industries tend to form clusters to become more competitive both in local and global markets. Identified traded cluster industries are summarised in cluster categories, as shown in Tab.2.

In total, the author identified 7 cluster categories and 47 subcategories with industries that have a potential forming regional clusters (Table 2). Forty-none per cent of the industries are manufacturing, while 51% - are service industries.

Table 2

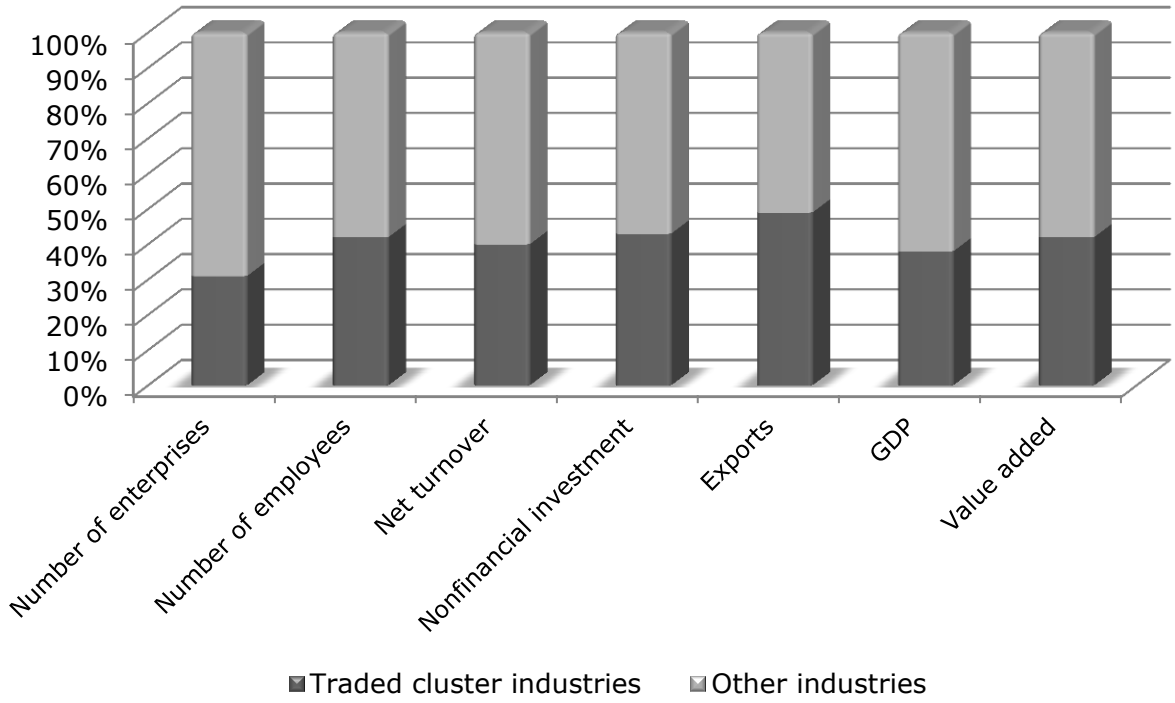
Traded cluster categories in Latvia

No	Cluster category	Subcategory
1	Manufacturing	23 (includes the manufacture of food and dairy products, textile, leather, footwear, paper, chemicals, metallic and non-metallic products, wood products and others)
2	Construction	3 (construction of buildings, civil engineering and specialised construction activities)
3	Transporting and storage	4 (land transport and transport via pipelines, water and air transport, warehousing and support activities)
4	Accommodation and food service activities	2 (accommodation and food service)
5	Information and communication	6 (includes publishing activities, programming, broadcasting, telecommunication, computer programming, information service activities and others)
6	Financial and insurance activities	3 (financial activities, insurance and activities related with financial activities and insurance)
7	Business services	6 (legal, accounting, management consultancy, scientific research and development, market research activities and others)

Source: author's construction, 2014

Traded cluster industries' impact on economy

Traded industries have a large impact on the economy. Traded industries' share in employment, number of enterprises, and other economic indicators is shown in Figure 1.



Source: author's calculations, 2013

Fig. 1. **Contribution of traded cluster industries to Latvia's national economy in 2011**

On average, 29% of all enterprises were engaged in the traded cluster industries, employing 40% of all employed individuals, thereby, one can conclude that larger enterprises operated in the traded cluster industries than in the other industries – 37 and 24 employees per enterprise, respectively. In Latvia, less than one third of all enterprises operate in the traded cluster industries, however, 40% of the net turnover and 40% of the nonfinancial investment are concentrated at the enterprises of these industries, besides, they account for 50% of total export, 39% of GDP, and 43% of total value added. According to the US study (Porter E.M., 2003), traded industries employed 32% of all employees, and average wages were 33% higher in these industries than in other industries. According to the data, in 2012 in Latvia, the average gross wage was 24% and the average net wage was 23% higher in the traded cluster industries than in the other industries.

Traded industries form regional clusters. Clusters have been established in Latvia since 2009 with the EU funding and government support are found in traded industries:

- wood processing and furniture;
- logistics and distribution;
- machinery and heavy industry;
- IT;
- apparel and light industry;
- food production.

According to previous research (Garanti, Zvirbule-Berzina, 2013c; 2013d), more traded industries have high potential to form clusters in the regions of Latvia.

Conclusions, proposals, recommendations

1. All industries in Latvia are somewhere concentrated as the average location Gini coefficient equals 0.54.
2. The location Gini coefficient calculation indicates that some industries like health care, water and electricity supply, education are not concentrated but distributed proportional to population, thus, ensuring local demand.
3. Industries that depend on natural resources, like quarrying, agriculture, fishery, and others, locate close to natural resources and the location Gini coefficient tend to be high in these industries.
4. The author identified 7 cluster categories and 47 industries that are located in particular regions because of their competitive advantage. These industries have the potential forming regional clusters.
5. Wages, export capacity, and contribution to GDP and value added are higher in traded industry clusters. The available support is also concentrated in these industries.

Bibliography

1. Amiti, M. (1998). New Trade Theories and Industrial Location in EU: a Survey of Evidence. *Oxford Review of Economic Policy,* Vol. 14, No. 2, pp. 45-53.
2. Arbia, G. (1989). *Spatial Data Configuration in Statistical Analysis of Regional Economic and Related Problems*. **In:** Advanced Studies in Theoretical and Applied Econometrics, Springer, p. 328.
3. Baptista, R., Escaria, V., Madruga, P. (2008). Entrepreneurship, Regional Development and Job Creation: the Case of Portugal. *Small Business Economics*, Vol. 30, Number 1, pp. 49- 58.

4. Bellu, L.G., Liberati, P. (2006). *Inequality Analysis: The Gini Index.* Food and Agriculture Organization of the United Nations, p. 30.
5. Boja, C. (2001). Clusters Models, Factors and Characteristics. *International Journal of Economic Practices and Theories*, Vol. 1, No 1, pp. 34- 43.
6. Chatterjee, S. (2003). Agglomeration Economies: The Spark That Ignites a City? *Business Review,* Fourth Quarter 2003, pp. 6- 13.
7. Delgado, M., Porter, E.M., Stern, S. (2010). Clusters and Entrepreneurship. *Journal of Economic Geography,* pp. 1-24.
8. Delgado, M., Porter, E.M., Stern, S. (2011). Clusters, Convergence and Economic Performance. *Institute for Strategy and Business Competitiveness. Harvard Business School,* p. 30.
9. Deltas, G. (2003). The Small-Sample Bias of the Gini Coefficient: Results and Implications for Empirical Research. *The Review of Economics and Statistics,* Vol. 85, Issue 1, pp. 226-234.
10. Fritsch, M. (2008). How Does New Business Formation Affect Regional Development? Introduction to the Special Issue. *Small Business Economics*, Vol. 30, Number 1, pp. 1- 14.
11. Garanti, Z. (2013a). Theoretical Aspects of Regional Clusters. *Middle-East Journal of Scientific Research*, No 13, pp. 23-30.
12. Garanti, Z. (2013b). Geographic Concentration of Economic Activities in Latvia. *Middle-East Journal of Scientific Research,* No 17(2), pp. 213-218.
13. Garanti, Z., Zvirbule-Berzina, A. (2013a). Towards Multi-dimensional Regional Cluster Identification. **In:** *Economic Science for Rural Development*: proceedings of the international scientific conference, No 31, pp. 225-233.
14. Garanti, Z., Zvirbule-Berzina, A. (2013b). Regional Cluster Initiatives as a Driving Force for Regional Development. *European Integration Studies,* No. 7, pp. 91-101.
15. Garanti, Z., Zvirbule-Berzina, A. (2013c). Policy Promoted vs. Natural Clusters: Case of Riga Region, Latvia. **In:** *Rural Development 2013: Innovations and Sustainability:* proceedings of the international scientific conference, Vol. 6, Book 1, pp. 532-537.
16. Garanti, Z., Zvirbule-Berzina, A. (2013d). In Search for Regional Clusters in Latvia. *Journal of Business Management,* No 7, pp. 93-104.
17. Gordon, I.R., McCann, P. (2000). Industrial Clusters: Complexes, Agglomeration and/or Social Networks? *Urban Studies,* Vol. 3, pp. 513- 532.
18. Guillain, R., Le Gallo, J. (2007). Agglomeration and Dispersion of Economic Activities in Paris and its surroundings: An Exploratory Spatial Data Analysis. *LEG Document de Travail Economie,* 2007-01, pp. 1-33.
19. Krugman, P. (1991). *Geography and Trade.* United States of America: MIT Press, p. 156.
20. Malmberg, A., Solvell, O., Zander, I. (1996). Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness. *Geografiska Annaler, Series B, Human Geography*, Vol. 78, No 2, pp. 85- 97.
21. Marshall, A. (2009). *Principles of Economics*. Unabridged Eight Edition, Cosimo Inc.
22. Palacios, J. (2005). Economic Agglomeration and Industrial Clustering in Developing Countries. The Case of the Mexican Silicon Valley. **In:** Kuchiki S. J., Juan S., Palacios J. *Joint Research Program Series,* No 137, pp. 161- 271.
23. Porter, E. M. (1990). *The Competitive Advantage of Nations*. New York: Free Press, p. 896.
24. Porter, E. M. (1998a). *On Competition.* Boston: Harvard Business School Press, p. 544.
25. Porter, E. M. (1998b). Location, Clusters and the 'New' Microeconomics of Competition. *Business Economics*, Vol. 33-1, pp. 7-17.
26. Porter, E. M. (1998c). Clusters and the New Economics of Competition. *Harvard Business Review*, November-December, pp. 77-90.
27. Porter, E. M. (2000). Location, Competition and Economic Development: Local Clusters in the Global Economy. *Economic Development Quarterly*, Vol.14-1, pp. 15-31.
28. Porter, E. M. (2003). The Economic Performance of Regions*. Regional Studies,* Vol. 37.6&7, pp. 549- 578.
29. Rocha, H., Sternberg, R. (2005). Entrepreneurship: the Role of Clusters. Theoretical Perspectives and Empirical Evidence from Germany. *Small Business Economics*, 24(3), pp.33-66.
30. Romero-Martinez, A.M., Montoro-Sanchez, A. (2008). How Clusters Can Encourage Entrepreneurship and Venture Creation. Reasons and Advantages. *International Entrepreneurship and Management Journal,* Vol. 4, Number 3, pp. 315- 329.

31. Saxenian, A. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128.* Cambridge: Harvard University Press, p. 233.

32. Shelburne, R.C., Bednarzik, R.W. (1993). Geographic Concentration of Trade Sensitive Employment. *Monthly Labor Review,* June, pp. 3-13.

33. Solvell, O., Linqvist, G., Ketels, C. (2003). *The Cluster Initiative Greenbook*. Stocholm: Stocholm School of Economics.

34. Spiezia, V. (2002). *Geographic Concentration of Production and Unemployment in OECD Countries*. OECD.

35. Spiezia, V. (2003). Measuring Regional Economies. *OECD Statistics Brief,* No 6, pp. 1-8.

36. Szanyi, M. (2012). Industrial Clusters: Concepts and Empirical Evidence from East-Central Europe. **In:** Welfens P.J.J., *Clusters in Automotive and Information & Communication Technology.* Springer-Verlag Berlin Heidelberg.

37. Szanyi, M., Csizmadia, M., Illessy, M., Iwasaki, I., Mako, C. (2010). The Relationship Between Supplier Networks and Industrial Clusters: and Analysis Based on Cluster Mapping Method. *Eastern Journal of European Studies,* Vol. 1, Issue 1, pp. 87- 112.

38. Xiangan, L., Yingchuan, Y. (2005). An Empirical Research on Industrial Agglomeration Level. Measurement and Industrial Cluster Identification. *International Symposium on Micro and Small Enterprises.* Retrieved: http://www.seiofbluemountain.com/upload/product/201001/1264476165t28nsud3.pdf. Access: 11.01.2014.

FACTORS INFLUENCING STARTING UP A BUSINESS IN LATVIA

Edgars Spruksts[1], Mg.proj.mgmt.
Latvia University of Agriculture

Abstract. In order to achieve the research aim – to identify the factors (including the facilitating and impeding ones) affecting business start-ups in Latvia – general research methods (scientific literature analysis, international experience analysis), the monographic and graphical methods, analysis and synthesis, induction and deduction, and statistical analysis were used in the present research. As a result, it was found that there was no established definition that strictly classified the affecting factors (including both the facilitating and impeding ones) in starting up a business. They can be divided into two main groups - internal and external factors. The research concluded that the state's interference in a business was very essential in Latvia because the inception of business activities was promoted by using different measures (e.g. reduction of administrative burden, funding, reduction of tax burden etc.).
Key words: start-up of business activities, affecting factors, facilitating and impeding factors.
JEL code: M13

Introduction

To stimulate the national economy, it is important for entrepreneurship to evolve in a long term; thus, various development planning documents containing goals, tasks, and possible solutions to accelerate the business development rate have been elaborated, consequently, contributing to the economy of the country as well.

For example, in the European Union, one of the major policy areas of the Member States is entrepreneurship. Its main goal is to increase the competitiveness of industry and enterprises, create new jobs, and foster economic growth by ensuring the environment, which would be friendly to business activities, especially small businesses and the production sector. It focuses on the development of small businesses and the production sector. Small and medium-size businesses make up 98% of the total; they provide 67% of jobs and create 85% of the new jobs, and in that way they are the driving force of economic growth, innovation, employment, and social integration. Yet, for the economy to recover the focus has to be placed on a strong real economy – manufacturing companies and other entrepreneurs –, considering globalisation and competition from developing countries, which is only increasing; the long-term economic prosperity of Europe will depend on how strong our industrial base is going to be (European Commission, 2013).

From the author's viewpoint, small businesses have an important role not only in the growth of GDP but also in regional development, and the same situation exists in Latvia as well. In Latvia, with a strong monocentric distribution of its population, which is concentrated in Riga, small businesses have the possibility to develop (for example, by creating new jobs, etc.) the rest of the region (including cities, municipalities and rural areas).

Yet, an analysis of the role of entrepreneurship in the economy of Latvia reveals that the aim stated in the policy document "Sustainable Development Strategy of Latvia until 2030" for Latvia is to

[1] Corresponding author. Tel.: + 371 28611125
E-mail address: Spruksts.e@gmail.com

become one of the leaders of the European Union in terms of distribution of innovative and exporting enterprises (Ministry of Regional Development and Local Government, 2010).

In the medium-term development planning document "National Development Plan 2007-2013", one of the goals is a favourable environment for business and living, emphasising regional growth and the development of modern infrastructures and services (Ministry of Regional Development and Local Government, 2006).

In the new development planning document "National Development Plan 2014-2020", one of the priorities is also the development of the national economy and an excellent business environment is one of the courses of action (Cross-Sectoral Coordination Centre, 2012).

The priority "Growth supporting areas" is also mentioned in the plan (Cross-Sectoral Coordination Centre (2012), which, from the author's viewpoint, is an important goal to continue to foster the economic activity in the regions of Latvia (including rural areas), and to use the potential of the existing areas etc.

The above mentioned proves that Latvia's government sets the target to promote entrepreneurship in order to develop the economy. From the author's viewpoint, it is important not only to set goals for the sustainable development of entrepreneurship but also to identify the factors which are directly affecting the inception of a business (including the facilitating and impeding factors).

By identifying the factors that contribute to the inception of a business, it is more possible to stimulate their development, and by revealing the impeding factors, it is easier to find solutions to overcome them. The identification and study of both aforementioned factors would contribute to business start-ups, and thus, develop the country's economy.

Therefore, the research aim is to examine the factors influencing the inception of a business (including the facilitating and impeding ones) in Latvia.

To achieve the above aim, two tasks are defined:

1) to discuss the theoretical aspects of factors affecting business start-ups;
2) to analyse the business start-ups and the factors influencing them in Latvia.

Research object: the inception of a business.

Research subject: influencing factors of business start-ups in Latvia.

The following research methods were used in the present research:

- general research methods (scientific literature analysis, international expertise), analysis and synthesis, induction and deduction were employed for studying the theoretical aspects of factors affecting business start-ups;
- analysis and synthesis, and statistical analysis were used for identifying the factors influencing business start-ups in Latvia.

The following sources of information were used: national and foreign scientific publications, Latvia's legal framework documents, information from databases of various institutions and organisations (including the Investment and Development Agency of Latvia, the Register of Enterprises etc.), theoretical, analytical and scientific literature and information provided by a variety of Internet resources.

Research results and discussion

This chapter examines the theoretical aspects of the factors impeding and facilitating business start-ups and analyses these factors in Latvia.

1. Theoretical aspects of the factors facilitating and impeding business start-ups

An analysis of the scientific literature provides no established definition, which would strictly classify the factors (including both the facilitating and impeding ones) affecting a business start-up. a number of different theories, developed by scientists from different countries, regarding achievements of successful entrepreneurs and businesses in various countries and sectors were also examined to examine the factors affecting the business start-up.

For example, S. Chorew and R.A. Alistair (2006), studying a business start-up in the high-tech sector in Israel, do not divide affecting factors into facilitating and impeding ones, as they believe that they all have a negative nature but in the result of a positive performance, they will lead the business to success. In their opinion, the factors are divided into two large categories: internal and external factors. Internal factors involve a business idea (according to customers' needs), a strategy (regular industry analyses), a team, competence, and marketing. These are the main factors that affect the company's management, customer relations, research, and its development. However, external factors relate with Israel's economy, politics and business environment. The success factors for small and medium-sized enterprises in Bangladesh studied by M. S. Chowdhury, Z. Alam and Md. I. Arif (2013) are also similar. They are divided into demographic factors (entrepreneurs' age, education, experience) and the factors of diverse environments (marketing, technology, access to capital, infrastructure, government, politics, and access to information).

From the author's viewpoint, the previous division of the factors could be attributed not only to Israel and Bangladesh but also to the context of Latvia, renaming the group of the internal and external factors into two large pillars or factors – an entrepreneur (including his/her company) and the state (including the economic and political environment). Also, it is possible to come to a conclusion that the entrepreneur factor can be characterised as more unstable/precarious to achieve success, as it depends on a number of subjective factors, such as entrepreneur's age, education, experience, idea, team, strategy etc. However, the country factor is more stable/secure but with a larger (more global) effect (e.g. economic and political environments).

In various theories, the success made by the business performer or entrepreneur him/herself is more highlighted, as demonstrated by studies of the relationship between entrepreneur human capital and new business performance (e.g. Evans D.S. and Leighton L.S., 1989; Bates T., 1990; Bruderl J., Preisendorfer P. and Ziegler R., 1992; Holtz-Eakin D., Joulfaian D. and Rosen H.S., 1994; Cressy R., 1996; Taylor M.P., 1999). There are also studies on the relationship between the original size of the company and its achievements (Wagner J., 1994; Mata J. and Portugal P., 1994; Audretsch D.B. and Mahmood T., 1995; Mata J., Portugal P. and Guimaraes P., 1995; Santarelli E., 1998; Honjo Y., 2000; Agarwal R. and Audretsch D.B., 2001). R. Cressy (1996) emphasises the role of an entrepreneur in building human capital, his/her age in particular, and proposes a model that indicates the probability that the survival of a new business depends on the increase in the entrepreneur's age. N. Harada (2003) believes that in Japan a young entrepreneur's success depends on his/her human capital, gender, and the size of the company. In this context, human capital may be referred to as the entrepreneur's initial experience but the size of the company as start-up capital, and the above factors may be described as success factors for the inception of a business. At the same time, the new entrepreneur's age and gender are described as negative factors for the success of a new entrepreneur.

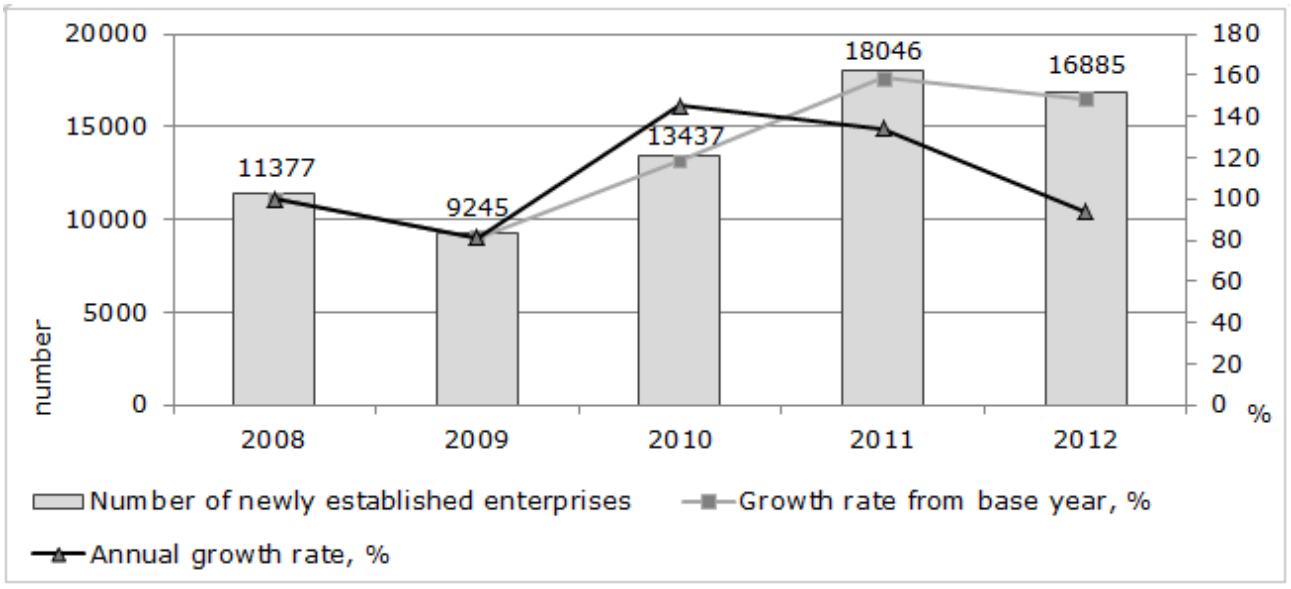
However, in connection with the experience of an entrepreneur, in other studies (e.g. Watson K., Hogarth-Scott S., and Wilson N., 1998; Taormina J. and Lao S.K.M, 2007) it has been found that business success is linked to the experience of doing business - for at least three years. From the author's viewpoint, experience is a very important factor in business but here one can distinguish two types of experience: an experience that has been acquired prior to the launching of business and an experience which develops during the course of business. The experience, which has been acquired before, would be the most useful for a business start-up.

While analysing "portraits" of small and medium - sized business owners/managers, according to R. Runyan, C. Droge and J.Swinney (2008), entrepreneurs can be divided into two groups: 1) those who have a business that is guided by economic objectives, for example, for them the most important objectives are the company's growth and innovations; and 2) those with minimal business thinking – who are guided by non-economic objectives, such as personal satisfaction, or providing a standard level of living for his/her family. It is also proved by a theory developed by A. Toledo-Lopez, R. Diaz-Pichard, J.C. Jimenez-Castaneda et al. (2012) that the company's financial performance indicators, such as profit and sales growth, number of employees or the number of customers, do not seem the main goal for many small and medium-sized business owners/managers. Rather, they are classified as non-financial goals, associated with work satisfaction, living a normal life etc.

While several authors divide the factors of success into financial and non-financial criteria, others call them economic and non-economic objectives (e.g. Reijonen H., 2008). But the question is why some of the small and medium-sized business owners/managers are more interested in achieving economic goals, while others want to achieve non-economic objectives. It seems that the answer depends on how they define success. M. Simpson, J. Padmore, and N. Newman (2012) consider that success and achievement are two different concepts that are difficult to separate one from other. According to the Oxford Dictionary, success means to attain the set objective or goal. In contradistinction to the success, achievements are the result of any action (e.g. Simpson M., Padmore J., and Newman N., 2012). It means that if the result leads to achieving the goal, it is considered a success (e.g. Ionita D., 2013). Similarly, the success and progress are determined also by human values. It has been clarified that the objectives, according to the value theory, influence our values (e.g. Rokeach M., 1979). In accordance with the S. H. Schwartz's (1994) theory, there are ten core values, which control human behaviour: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, conformity, tradition, and security. Values are not only a psychological but also a social concept, and thus, they can be used at the organisational level (e.g. Rokeach M., 1979). Considering the entrepreneur's main position in a company (e.g. Andersson, S. and Tell, J., 2009), his/her values will affect the organisation, and hence, the decisions, strategies, and business activities (e.g. Tomczyk D., Lee J. and Winslow E., 2013). In the author's opinion, human values, success and achievements are subjective terms and are dependent on several factors such as the entrepreneur (age, education etc.) and various external factors, such as a particular sector, the government etc., so these subjective terms should not be taken as the basis for creating an image of a successful entrepreneur.

2. Business start-up and the factors influencing it in Latvia

While analysing the registration of companies in Latvia, information from the Register of Enterprises shows that the number of newly established enterprises (including cooperatives, sole proprietorships, agricultural farms, fish farms and their branches) and merchants (including a limited liability company, stock company, individual merchant, general partnership, limited partnership and its branches, European commercial company) in 2012 is down by 6 % compared with 2011, while it has increased by 48% compared with 2008 (Figure 1). The situation during the period has been inconsistent – in 2009, 2012 and 2013, the number of companies registered decreased compared with the previous year. In the author's opinion, a decrease in company registration does not indicate any specific change in the economy but rather that the situation may be starting to stabilise.



Source: author's calculations based on the Register of Enterprises of the Republic of Latvia

Fig. 1. **Number of new enterprises and merchants registered in Latvia in 2008 - 2013**

As regards the factors influencing business start-ups in Latvia, the author of the research will follow the theories by S. Chorew and R.A. Alistair (2006), M.S. Chowdhury, Z. Alam and Md.I. Arif (2013) which deal with the division of factors into two groups - internal (entrepreneur) and external (state). In assessing the entrepreneur's factor, for example, the Investment and Development Agency of Latvia survey of new entrepreneurs of 2012 has found that the most important qualities and skills of entrepreneurs, which are necessary to succeed in business, are determination (27%) and sector-specific knowledge (18%). The passion about the idea and its implementation (17%), good "salesman" ability (12%) and many business contacts (14%) is also important. In contrast, the smallest number of the respondents (1%) stated that education in business has an important role (Opinion of Young Entrepreneurs and Investors about the Key of Successful Business Differ, 2012). In short, the entrepreneur's element is examined in this survey. What is interesting is that according to the theory by M. S. Chowdhury, Z. Alam and Md. I. Arif (2013), one of the factors is the entrepreneur's education, whereas, the survey of new entrepreneurs in Latvia shows that education does not play a significant role in business. From the author's viewpoint, a prospective entrepreneur requires subjective qualities such as determination, passion for ideas etc., while education is also an important criterion in starting a business,

as it develops the human personality as well as gives an experience both in the performance of a business and in the industry, in which the entrepreneur wants to engage.

Yet, an analysis of the state factor revealed that during the recent years in Latvia, a number of measures have been taken to promote especially business start-ups in order to recover from the financial crisis of 2009 and to stimulate the economy as well as to promote the development of entrepreneurship.

The author believes that one of the greatest incentives for promoting business start-ups was the micro-enterprise tax (9%) introduced in 2010. Therefore, during the period from 1 September 2010 to 30 June 2012, the number of micro companies has significantly increased (by 72%) (Ministry of Welfare, 2012). Yet, from 2015, the micro-enterprise tax will gradually increase - in 2015 (11%), in 2016 (13%), and in 2017 it will reach 15% (Amendments of the Micro-enterprise Tax Law, 2013). Such a move can cause a significant change in entrepreneurship, encouraging the liquidation of existing companies and hindering the formation of new companies.

On 1 May 2010, amendments to the Commercial Law came into force, which allowed the possibility to establish a limited liability company with an equity capital of less than LVL 2,000 if the company meets the statutory conditions (The Commercial Law, 2002). According to information of the Register of Enterprises, this amendment significantly increased the number of companies registered in Latvia already in the next year by 34%.

Every year in Latvia, the Ministry of Economics develops a business environment improvement plan which includes tasks (e.g. to reduce the start-up cost, to design e-services for easy registration submissions etc.) for reducing administrative burdens also for the business start-up. In the author's view, the measures included in the plan substantially simplify the business start-up procedures and create a more favourable environment for new entrepreneurs as well as for the development of existing enterprises.

According to the information collected by the Investment and Development Agency of Latvia, there are various programmes (including the European Union's Structural Funds)/options for starting a business, such as the new product and technology development programme for micro, small and medium-sized enterprises, international marketing for entering foreign markets, business incubators, centres of competence, technology transfer contact offices, mezzanine loans, loan guarantees, export guarantees, start-up venture capital funds, the micro-credit programme, development loans for small and medium business, working capital for farmers etc. (Investment and Development Agency of Latvia, 2013).

From the author's view, such support measures as business incubators, centres of competence, the new product and technology development programme for micro, small and medium-sized enterprises etc., contribute directly to the regions of Latvia (including rural development).

Although most of the state's activities regarding business start-ups can be evaluated only in a positive way (for example, the regulatory framework amendments to the Commercial Law, the micro-enterprise tax, e-services), there are also measures (e.g. various amendments to the laws and regulations, raising the existing taxes (for example, a gradual increase of the micro-enterprise tax) and the introduction of new taxes etc.), which, in the author's opinion, will create obstacles for starting a business and impede the development of the existing business environment.

Conclusions, proposals and recommendations

While studying the factors affecting business start-ups, it was established that there cannot be found a definition, which would strictly classify affecting factors (including both the facilitating and impeding ones) for business start-ups, and after evaluating a number of scientific theories on the factors influencing a business start-up, it was found that they can be different depending on a country, a sector, or an entrepreneur.

Also, based on the scientific literature, main influencing factors for business start-ups can be divided into two main groups - internal and external. To internal factors, capabilities and skills of a new entrepreneur to do business (including the company's elements - team, strategy, marketing etc.) may be attributed, while external factors involve the economic and political environment of a particular country in which the entrepreneur is developing business activities.

Regarding starting a business and the factors influencing it in Latvia, it can be concluded that the state has an essential role in doing business because business start-ups are being encouraged by different measures (e.g. reducing the administrative burden, funding, reducing the tax burden etc.). However, any state intervention may also adversely affect the business, such as setting new administrative functions for entrepreneurs, introducing new taxes, raising the existing taxes etc., thus, hindering the development of existing businesses and discouraging the establishment of new companies.

Bibliography

1. Agarwal, R. and Audretsch, D.B. (2001). Does Entry Size Matter? The Impact of the Life Cycle and Technology on Firm Survival. Journal of Industrial Economics 49, pp. 21–43.
2. Amendments for Micro-enterprise Tax Law (2013). Retrieved: https://www.vestnesis.lv/?menu=doc&id=262306. Access: 04.01.2014.
3. Andersson, S., and Tell, J. (2009). The Relationship between the Manager and Growth in Small Firms. Journal of Small Business and Enterprise Development, 16(4), pp. 586-598.
4. Audretsch, D.B., Mahmood, T. (1995). New Firm Survival: New Results Using a Hazard Function. Review of Economics and Statistics 77, pp. 97-103.
5. Bates, T. (1990). Entrepreneur Human Capital Inputs and Small Business Longevity. Review of Economics and Statistics 72, pp. 551–559.
6. Bruderl, J., Preisendorfer, P. and Ziegler, R. (1992). Survival Chances of Newly founded Business Organizations. American Sociological Review 57, pp. 227–242.
7. Chorew, S. and Alistair, R. A. (2006) Success in Israeli High-tech Start-ups; Critical Factors and Process. Technovation, Volume 26, pp. 162-174.
8. Chowdhury, M.S., Alam, Z. and Arif Md.I. (2013) Success Factors of Entrepreneurs of Small and Medium Sized Enterprises: Evidence from Bangladesh. Procedia Economics and Finance (2013), Volume 3, Issue 2, pp. 503 – 511.
9. Cressy, R. (1996). Are Business Start-ups Debt-rationed? Economic Journal 106, pp. 1253–1270.
10. Cross-Sectoral Coordination Centre (2012). National Development Plan 2014-2020. Retrieved: http://www.varam.gov.lv/lat/pol/ppd/ilgtsp_att/?doc=13858.

    Access: 01.01.2014.
11. European Commission (2013). Enterprise. Retrieved:

    http://europa.eu/pol/enter/index_lv.htm. Access: 30.12.2013.
12. Evans, D.S. and Leighton, L.S. (1989). Some Empirical Aspects of Entrepreneurship. American Economic Review 79, pp. 519–535.
13. Harada, N. (2003). Who Succeeds as an Entrepreneur? An Analysis of the Post-entry Performance of New Firms in Japan. Japan and the World Economy, Volume 15, pp. 211-222.

14. Holtz-Eakin, D., Joulfaian, D. and Rosen, H.S. (1994). Sticking it out: Entrepreneurial Survival and Liquidity Constraints. Journal of Political Economy 102, pp. 53–75.
15. Honjo, Y. (2000). Business Failure of New Firms: an Empirical Analysis Using a Multiplicative Hazards Model. International Journal of Industrial Organization 18, pp. 557–574.
16. Ionita, D. (2013). Success and Goals: an Exploratory Research in Small Enterprises. Procedia Economics and Finance Volume 6, pp. 503-511.
17. Investment and Development Agency of Latvia (2013). Available Supporting Tools for Entrepreneurs. Retrieved:

    http://www.liaa.gov.lv/lv/pieejamie-atbalsta-instrumenti-uznemejiem.

    Access: 05.01.2014.
18. Mata, J. and Portugal, P. (1994). Life Duration of New Firms. Journal of Industrial Economics 42, pp. 227–245.
19. Mata, J., Portugal, P. and Guimaraes, P. (1995). The Survival of New Plants: Start-up Conditions and Post-entry Evolution. International Journal of Industrial Organization 13, pp. 459–481.
20. Ministry of Regional Development and Local Government (currently the Ministry of Environmental Protection and Regional Development) (2006). National Development Plan 2007 – 2013 (2006). Retrieved: http://www.varam.gov.lv/lat/darbibas_veidi/tap/lv/?doc=13524. Access: 01.01.2014.
21. Ministry of Regional Development and Local Government (currently Ministry of Environmental Protection and Regional Development (2010). Sustainable Development Strategy of Latvia until 2030. Retrieved: http://www.varam.gov.lv/lat/pol/ppd/?doc=13857. Access: 01.01.2014.
22. Ministry of Welfare (2012). The Report "On Progress and Results of Practical Implementation of the Micro-enterprise Tax Law from September 1, 2010 to June 30, 2012". Retrieved:

    http://www.google.lv/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC4QFjAA&url=http%3A%2F%2Fmk.gov.lv%2Fdoc%2F2005%2FLMZino_120912.2140.doc&ei=Lh3FUsb7DejygPpo4KACg&usg=AFQjCNGUpttv_yvvOkwrj_ERMJYC4J2ofQ&sig2=wAbxKv_8C5mRIx_Z2_3PpQ&bvm=bv.58187178,d.bGQ. Access: 01.01.2014.
23. Opinion of Young Entrepreneurs and Investors about the Key of Successful Business Differ (2012). Retrieved: http://www.naudabiznesam.lv/blogs/jauno-uznemeju-un-investoru-viedoklis-par-veiksmiga-biznesa-atslegu-atskiras/. Access: 02.01.2014.
24. Reijonen, H. (2008). Understanding the Small Business Owner: what They Really Aim at and how this Relates to Firm Performance. Management Research News, 31(8), pp. 616-629.
25. Rokeach, M. (1979). Understanding Human Values Individual and Societal. New York: The Free Press.
26. Runyan, R., Droge, C., and Swinney, J. (2008). Entrepreneurial Orientation versus Small Business Orientation: What Are Their Relationships to Firm Performance? Journal of Small Business Management, 46(4), pp. 567-588.
27. Santarelli, E. (1998). Start-up Size and Post-entry Performance: the Case of Tourism Services in Italy. Applied Economics 30, pp. 157–163.
28. Schwartz, S. H. (1994). Are There Universal Aspects in the Structure and Contents of Human Values? Journal of Social Issues, 50(4), pp. 19-45.
29. Simpson, M., Padmore, J., and Newman, N. (2012). Towards a New Model of Success and Performance in SMEs. International Journal of Entrepreneurial Behaviour & Research, 18(3), pp. 264 -285.
30. Taormina, J, and Lao, S.K. M. (2007). Measuring Chinese Entrepreneurial Motivation: Personality and Environment Influences, International Journal of Entrepreneurial Behavior and Research, 13(4), pp. 200-221. Retrieved: http://dx.doi.org/10.1108/13552550710759997. Access: 30.12.2013.
31. Taylor, M.P. (1999). Survival of the Fittest? An Analysis of Self-employment Duration in Britain. Economic Journal 109, C140–C155.
32. The Commercial Law (2002). Retrieved: http://likumi.lv/doc.php?id=5490. Access: 02.01.2014.
33. Tomczyk, D., Lee, J., and Winslow, E. (2013). Entrepreneur's Personal Values, Compensation, and High Growth Firm Performance. Journal of Small Business Management, 51 (1), pp. 66-82.
34. Toledo-Lopez, A., Diaz-Pichardo, R., Jimenez-Castaneda, J. C., and Sanchez-Medina, P. S. (2012). Defining Success in Subsistence Businesses. Journal of Business Research, 65, pp. 1658-1664.
35. Wagner, J. (1994). The Post-entry Performance of New Small Firms in German Manufacturing Industries. Journal of Industrial Economics 42, pp. 141–154.
36. Watson, K., Hogarth-Scott, S., and Wilson, N. (1998). Small Business Start-ups: Success Factors and Support Implication. Journal of Entrepreneurial Behaviour and Research, 4(3), pp. 217-238.

    Retrieved: http://dx.doi.org/10.1108/13552559810235510. Access: 30.12.2013.

ASSESSMENT OF LITHUANIAN STRATEGIC PLANNING DOCUMENTS ON INFRASTRUCTURE DEVELOPMENT FOR NEW JOBS CREATION IN THE RURAL AREAS

Alvydas Aleksandravicius[1], Aleksandras Stulginskis University

Asta Raupeliene[2], Dr, assoc. prof., Aleksandras Stulginskis University

Abstract. Lithuania, similar to the whole European Union, features an insufficient employment growth rate and a need for a strategic approach towards the infrastructure development for jobs creation. The research aim at assessing the importance of the objectives, tasks, and measures for development of employment in rural areas is laid down in strategic planning documents. The importance of the EU support programmes in the context of raising employment rates and infrastructure development was assessed using the content analysis method. The research results show that the priorities, objectives, tasks, and measures of Lithuanian strategic planning documents are centred on the overall growth of the national economy, which can also be partially described by the indicator of investments into infrastructure development for creation of new jobs. However, measures also play a vital role to keep the balance between the social and economic elements of the development in rural areas, and between territorial cohesion and sustainable development objectives and tasks as well as their implementation.

Key words*:* employment, jobs, infrastructure, rural areas*.*

JEL code: C14, C61, Q13.

Introduction

In the light of the Lithuanian integration into the European Union (hereinafter - the EU) and the processes of globalisation, Lithuania is facing new challenges related with the objectives of increasing employment rates and creating new jobs by infrastructure development in the rural areas. Employment remains one of the most important components of the Lisbon Strategy, which aims at making the EU a competitive and dynamic global knowledge economy, capable of maintaining sustainable development of the economy by creating more and better jobs and achieving stronger social cohesion (European Union..., 2009).

Recently, a number of strategic documents have been prepared both in the EU and Lithuania. They regulate the development of rural areas and the development trends on the labour market. Those documents are no more than development road signs, directions marked with perspective guidelines that must be observed. Nevertheless, the suggested development guidelines are characterised by uniformity, common approaches, and objectives. There are different tools, strategies, models, and concepts described in the literature and applied in practise. However, despite their growing variety there is no single approach that would integrate them into a comprehensive picture of the interrelation between separate concepts.

[1] *Email address: aleksandravicius@gmail.com*
[2] *E-mail address: asta.raupeliene@asu.lt*

Infrastructure development for jobs creation in rural areas represents one of the key objectives in the implementation of the EU and Lithuanian strategic guidelines for rural development.

The experience of the past decade and the results of the conducted research show that so far new jobs in rural areas are mostly related with agricultural activities. Even various EU support programmes do not lead to long-term jobs, which contribute to a balanced supply and demand of labour force and sustainable rural development.

However, it should be noted that even with the growing emphasis on the analysis of the regional employment policies as well as their evaluation issues, scientific works in this field are scanty for all the prominence given to the impact of the policy objectives, tasks and measures related to the infrastructure development for jobs creation. The works of authors (Havlik, 2011; Jazepcikas et al., 2009; Gruzevskis, Grazulis, 2009) have analysed the development of the labour market and employment policy. Other authors (Ziminiene, 2008; Zukovskis, 2009) came up only with general evaluations of the accomplishment of the objectives in the Lithuanian strategic planning documents or the impact of political tools on jobs and infrastructure development. Virtually, there have been no systematic studies that would examine the impact of the objectives, tasks, and measures of the Lithuanian strategic planning documents on the infrastructure development for jobs creation in rural areas.

Aim of the research - to evaluate the importance of the objectives, tasks, and measures of Lithuanian strategic planning documents on infrastructure development for jobs creation in rural areas.

Task of the research:

1) to evaluate the impact of the Lithuanian Single Programming Document 2004-2006 implementation to employment effects;

2) to evaluate the significance of the EU support strategies and programmes in the context of new jobs creation and infrastructure for jobs development in 2000-2013.

Research object - Lithuanian strategic planning documents related with infrastructure development for jobs creation in rural areas.

Research methods include statistical methods, analysis and synthesis of scientific literature and strategic planning documents, and the applied content analysis method, which is based on a statistical evaluation of different text characteristics. This content analysis method was used to calculate the frequencies of most used keywords, the interrelation of different text elements and their relation with the whole communication content. The important concerns of a document are reflected by frequencies of the most used keywords. Two keywords were addressed to analyse the significance of the Lithuanian strategic planning documents in the context of new jobs creation by infrastructure development.

Research results and discussion

The importance of the cohesion policy is particularly critical during the economic recession, when there is an overall decline in the production and trading volumes, income and employment levels, and the recession touches upon most of the national economy areas.

During the recent decade, in their discussions on the pursuit of full employment, European researchers, policy makers and practitioners talk less about a reduction of unemployment and more

about the increase in the activity of the population and the employment rates, a rational and efficient use of labour resources. The EU enlargement, globalisation, labour migration, rapid changes in technologies, demographic threats, such as population ageing and declining birth rates, climate change, and associated economic restructuring cause the politicians to look for ways and mechanism for promoting favourable conditions for employment growth (The European Employment..., 1999).

Jazepcikas et al. (2009) consider employment a complex and dynamic system. In terms of sustainable development of employment in rural areas, the process of new jobs creation is influenced by (Jazepcikas et al., 2009; Havlik, 2010):

- exogenous assets - policies and legal regulation, local market economy, financial instruments and support, education and extension systems;
- endogenous assets – human and social capital, infrastructure, financial, natural and physical resources.

Exogenous assets (policies and legal regulation) determinate the level of infrastructure development and infrastructure, in its turn, makes an important influence on rural employment. Researchers admit that the lack of infrastructure is a barrier for employment; however, infrastructural development alone is not enough to increase the level of employment of the rural population. Rural regions with a higher endowment of infrastructure tend to show a higher employment growth and increased number of high-productive jobs places. The available estimates suggest that nearly 27 thousand jobs were either created or retained by the end of the implementation of the projects of the Lithuanian SPD 2004-2006 programming period (Ministry of Finance..., 2009).

Due to the created additional demand (internal and presumably external) and the effects of improvements in labour productivity, the impact of the EU support on employment was both positive and negative.

Table 1

Number of new jobs and their cost by the Lithuanian SPD 2004-2006 investment types (the end of 2008)

EU support by the Lithuanian SPD 2004-2006 for investment type		Number of new permanent and temporary jobs (the end of 2008)		Average cost of new jobs creating, in LTL		Achieved assimilation indicator
		Total	Number of new permanent jobs	Total cost of new jobs	Cost of new permanent jobs	
1.	Physical capital	5 447	2 784	121 932	238 562	>50
2.	Infrastructure	14 513	7 384	116 169	228 305	>75
3.	Human capital	6 814	2 935	104 361	242 304	>50
Total		**26 773**	**13 103**	**114 336**	**233 620**	**>50**

Source: Assessment of Impact of the Implementation of the 2004-2006 Lithuanian Single Programming Document for Employment, 2010

Taking account of all the effects, it is argued that, in terms of new permanent jobs, the effects of the EU structural assistance on employment in Lithuania totalled approximately 13 thousand jobs at the end of the SPD implementation period (2008). By the end of 2008, it was possible to create approximately 26.8 thousand further permanent and temporary jobs compared with the numbers that could have been achieved without the EU and state aid interventions (Table 1).

The Lithuanian SPD 2004-2006 implementation reports revealed that investments in corporations' physical capital formation demonstrated the lowest efficiency rates in creating all jobs and permanent jobs. Although, new jobs were created with the help of the EU funding for construction of new production facilities and direct assistance to businesses and individuals starting their own business, and despite rather favourable macroeconomic conditions at that time, these interventions led to a strong crowding-out effect on private investment, which could have caused an increase in the job creation costs.

The largest benefits of support were found in the sectors of construction (approximately 10 thousand total jobs, including about 5.6 thousand permanent jobs), public administration (approximately 2.5 thousand total jobs, including about 1.2 thousand permanent jobs), education (approximately 2.9 thousand total jobs, including about 1.3 thousand permanent jobs), and health care and social work (approximately 1.3 thousand total jobs, including about 0.7 thousand permanent jobs) (Assessment of Impact..., 2010). Accordingly, the numbers of jobs created in the agricultural sector and rural development amounted to 3.8 thousand total jobs, including about 1.8 thousand permanent jobs. Such impact trends can be explained by the extensive investments in the construction of new public infrastructure with the financing from the EU.

Table 2

Numbers of new jobs and their costs by the Lithuanian SPD 2004-2006 priorities

EU support by the Lithuanian SPD 2004-2006 priorities	Numbers of new permanent and temporary jobs (the end of 2008)		Average cost of new jobs, in LTL		Achieved assimilation indicator
	Total	Number of new permanent jobs	Total cost of new jobs creating	Cost of new permanent jobs creating	
Development of social and economic infrastructure	10 054	5 501	119 187	217 841	>75
Human resource development	5 596	2 332	101 079	242 548	>50
Development of production	6 507	3 075	118011	249 702	>50
Rural development and fishery	3 831	1 811	113 947	241 073	>50
Technical support	785	384	118 139	241 491	>50
Total	**26 773**	**13 103**	**114 336**	**233 620**	**>50**

Source: Assessment of Impact of the Implementation of the 2004-2006 Lithuanian Single Programming Document for Employment, 2010

It is estimated that in Lithuania during the SPD implementation period, a job created due to the impact of the EU funding (both temporary and permanent) averagely accounted for approximately LTL 114.3 thousand, whereas, the average cost of a permanent job amounted to approximately LTL 233.6 thousand (Table 2).

Furthermore, it should be noted that the assessment reports analysing the infrastructure development for employment and job creation aspects cover only the SPD implementation period, thus, the evaluation feasibility of their findings and recommendations may be limited, since the EU support rules say that beneficiaries are obliged to sustain new jobs created by the EU funding for only five years. The EU support managing authorities typically do not monitor or analyse what happens to the newly created jobs after the minimum commitment period.

Secondly, neither the Lithuanian SPD 2004-2006 implementation monitoring system nor the evaluation system monitors and assesses new job creation by individual territorial administrative units, for instance, municipalities and counties (before 1 July 2010) or urban and rural areas, which significantly reduces the ability to assess one of the principles of the EU policy – the efficiency of the implementation of territorial cohesion.

Table 3

Assessment of the importance of the EU and Lithuanian support strategies and programmes on the infrastructure development for new jobs creation in rural areas in 2000–2013

The EU and Lithuanian support strategies and programmes	Assessment of impacts on the EU and Lithuanian support strategies and programmes *"**+++**" – very significant; "**++**" - medium significant; "**+**" – low significant; "**...**" – no links*	
	Development of new jobs	Development of infrastructure for jobs creation
Operational Programme for Economic Growth for 2007–2013	**++**	**++**
Operational Programme for Promotion of Cohesion for 2007–2013	**++**	**+++**
Operational Programme for Human Resource Development for 2007–2013	**++**	**...**
Rural Development Programme for Lithuania 2007–2013	**++**	**+++**
Lithuanian National Plan of Fisheries Sector for 2007–2013	**+**	**+**
SAPARD Programme for Lithuania 2000–2006	**+**	**++**
Lithuanian Single Programming Document (SPD) 2004-2006	**+**	**++**
Lithuanian Rural Development Plan (RDP) 2004-2006	**+**	**...**

Source: authors' calculations

The performed assessment of the significance of the national and EU support strategies and programmes on the infrastructure development for new jobs creation in rural areas in 2000–2015 is used in the context of employment in the objectives, tasks, directions, and measures laid down in those documents is rather diverse (Table 3).

Furthermore, the results of the performed assessment show that the priorities, objectives, tasks, and measures of most Lithuanian strategic planning documents are focused only on the overall growth of the national and regional economy, which is, to a certain degree, measured by the new jobs indicator. The balance between the regional, social and economic development elements, and between labour supply and demand, territorial cohesion and sustainable development objectives and tasks as well as their implementation measures, which are adequately addressed only in the Operational Programme for Promotion of Cohesion for 2007–2013, have been maintained as well. However, the Strategy does not set a clear financial mechanism for the implementation of the declared priorities, objectives and targets. The implementation of the objectives and tasks of the Strategy is materialised via other sectorial national economy development programmes. However, in the absence of an integrated progress indicator system for the implementation of different national strategic planning documents, the extent to which the deliverables of Progress Strategy Lithuania 2030 are reflected in the implementation of the measures set forth in those documents is unclear. It may be pointed out that equal opportunities (principle of equilibrium) and regional development (territorial cohesion defining sustainable development) are only horizontal criteria for the evaluation of the impact of the EU and state aid measures on employment.

It should be noted that the pursuit of higher employment rates, which represents an ideal and balanced situation in the labour market, has always been a difficult political task and will remain as such. In view of the complexity of the subject of the employment policy and the abundance of factors influencing the labour market processes, it must be acknowledged that those processes are not easy to control. The priorities and measures laid down in the said strategic documents lack broader inclusion of social partners, in particular, when seeking to promote employment and economic activity in the rural areas. Furthermore, to define the EU and national support for new jobs in rural areas, there is a need for clearer criteria of sustainability.

The EU institutions shape the cohesion policy priorities and guidelines, while the Member States choose the measures to achieve the present objectives. Therefore, with regard to the objectives of the strategic planning documents, institutions of the EU Member States are free to make their own decisions as to which the EU support measures will have the greatest effect on the employment and economic activity of the population. Although the progress of Member States is based on the submitted reports on the implemented cohesion policy measures, which can lead to recommendations and indications as to the areas to be taken into consideration, there is no yet penalty mechanism with regard to a failure to implement certain provisions or to take into account the recommendations of the European Commission.

In 2010, the EU Council adopted a new Strategy Europe 2020 for smart, sustainable and inclusive growth of the EU. The EU set targets have to be achieved in five key areas till 2020. The strategy says that the employment target for the population aged 20-64 of 75% has to be reached by 2020 (Communication from..., 2010). Therefore, in the context of increased global competition and ageing population, better jobs is a task which has to be addressed by the EU from now to 2020 in order to preserve the European model of society based on the underlying values of equal opportunities, high quality of life, social inclusion and a healthy environment.

The Cohesion policy in Lithuania is implemented in the light of the EU strategic guidelines and they are consistent with the objectives of the Lisbon and currently the EU 2020 strategy. Lithuania has adopted programming documents which lay down the objectives, tasks, and key measures to further increase the levels of employment and to reduce the unemployment rates in the country.

In order to reach the targets of the EU Cohesion policy, the EU Member States should produce national reform programmes containing measures aimed at achieving the goals of economic growth and job creation. In April 2011, as part of its commitments to the EU, the Lithuanian government adopted the National Reform Agenda. This Agenda summarises all the key structural reforms directed at eliminating obstacles, which hinder the economic growth in Lithuania and the pursuit of Europe 2020 targets. The document was drawn up in the light of the provisions of the Progress Strategy for Lithuania "Lithuania 2030" and the commitments made by the European Council in 2010, integrated EU employment policy guidelines, the Europe 2020 Strategy adopted in 2010, the doctrines of the Euro Plus Pact approved by the EU Council in March 2011, and other strategic planning documents.

The National Reform Agenda (Lithuanian Convergence..., 2011) outlines the following priority areas for action to ensure a better balancing of the labour market and to prevent structural unemployment in the short and medium term:

1) increasing labour market participation;
2) making work more attractive;
3) getting the unemployed back to the labour market;
4) balancing security and flexibility.

Lithuania provides for the following priority actions to increase employment (Lithuanian Convergence..., 2011):

1) boosting jobs and stimulating job demand;
2) providing relevantly qualified workforce;
3) developing an inclusive labour market;
4) providing opportunities for combining family and work commitments.

The National Reform Agenda (Lithuanian Convergence..., 2011) provides that efforts will be made to eliminate obstacles to business development and to increase labour market flexibility for the recovering national economy to create more new jobs. The plans include increasing employers' interest in creating quality jobs by reducing the employers' costs of hiring, linking wage changes with an increase in labour productivity, providing target subsidies for new jobs in areas with high unemployment rates, and developing social responsibility of organisations. A social dialogue will lead to an upgrade of the work relations, flexible terms and conditions of the employment contracts, possibilities to regulate the working time and to organise the work.

Qualitative changes in education and vocational training systems will represent a rather important factor in providing relevantly qualified labour force and in increasing population employment rates in the long term. Retraining for the unemployed will aim at attracting more manpower to the labour market and keeping it, while long-term forecasts of qualification demand will lead to a reduced imbalance between the labour force demand and the supply of skills, and consequently, to higher levels of employment.

Adverse demographic trends and an extensive scope of emigration result in decreasing numbers of working-age population. That is one of the factors determining the estimated fall in the GDP growth in 2012–2014 and limiting the possibilities to cover the expenditure on social security due to the ageing of the population. Since the reduction in labour resources will weaken the potential of the national economy development, it is a vital in the near future to keep older workers in the labour market before they retire and to facilitate fast labour market integration of graduates.

One of the key hindrances to the increase in the participation of young people, older workers, and those approaching retirement is an insufficient match of skills with labour market needs. Due to mismatches of skills developed at education institutions and the needs of the labour market, coupled with the lack of work experience, young people find it difficult to find a job. Integration of older workers and those approaching retirement into the labour market is limited by their poor professional mobility and incapacity to adapt to change due to limited life-long learning possibilities. On the contrary, at present, typical situation can be observed in the labour market: even with the high rates of unemployment, some vacancies are hard to fill owing to the shortage of qualified workforce. High unemployment rate and insufficient match of qualifications to the market needs leads to a threat of structural unemployment and a long-term labour market imbalance.

In long-term perspective, the improvement of the employment state of affairs and maintaining high employment rates will depend on the success of bringing not active people into the labour market. The process of developing an inclusive labour market is linked with removing barriers to labour market participation by offering the unemployed increased incentives to work, reducing benefit dependency, and introducing measures for prevention of illegal employment. The opportunities of labour market participation depend on the performance of the territorial labour exchange in focus on providing individual support to people who need such assistance, on service availability, quality and efficiency, and on cooperation with private employment agencies. Active labour market policies will seek to address the education, skill development and employment issues among young people, long-term unemployed, older workers and other people. Disabled people, parents with children and carers still have limited possibilities of labour market integration.

The new strategies and programmes of economic activity and support of employment among rural population should first aim at substantial changes in the rural social and economic development and the behaviour of rural people. Moreover, they should secure the sustainability of new jobs. In addition, to evident deficiencies in the priorities of the strategic planning documents, it is also vital to take into account the external environment mismanagement in several EU countries, which is unfavourable for overall economic growth, since the dynamic and spontaneous nature of employment and economic activity can render them hard to control even in the presence of a perfect strategy. Although the creation and development of new jobs in rural areas is adequately based on the strategic provisions of the EU and Lithuanian rural development and regional policy for the period 2014-2020, they must be adapted, i.e. the specific features of the rural regions and their existing potential should be taken into account.

Conclusions

1. Lithuanian SPD 2004-2006 implementation report evaluation, is based on the results of established and permanent jobs like the aspect of sustainability, investments in corporation with physical capital formation demonstrated the lowest efficiency rates. In terms of the Lithuanian SPD priorities, the least efficient investments were those into the development of the rural infrastructure. Whereas from the point of permanent job cost, the most inefficient investment was made into the development of the production sector. In the short-term, (all jobs) investments made in Lithuania into human capital and the development of physical infrastructure turned out to be the most efficient.
2. The priorities and measures of most analysed Lithuanian strategic planning documents are centred on the overall growth of the national economy; however, to keep the balance between the social and economic elements of the development, the objectives of territorial cohesion and sustainable development also play an important role. The research shows that the objectives are emphasised in the Operational Programme for Promotion of Cohesion for 2007–2013 and Rural Development Programme of Lithuania for the period of 2007–2013.
3. The priorities and measures of the Lithuanian strategic planning documents for 2007–2013 lack clearer criteria of sustainability and balance in defining the allocation of the EU and national support for new jobs creation in rural areas. It is not sufficient to have infrastructure development for jobs creation in rural areas only based on the EU and Lithuanian strategic development provisions: the specific features of the rural regions and their existing potential should also be taken into account.

Acknowledgements

The Study was funded by the Lithuanian Science Council (Contract No MIP-004/2013). The Authors are thankful for the help of Lithuanian Science Council.

Bibliography

1. Assessment of Impact of the Implementation of the 2004-2006 Lithuanian Single Programming Document for Employment (2010). Vilnius: Finansu ministerija (in Lithuanian).
2. Communication from the Commission (2010). EUROPE 2020. A Strategy for Smart, Sustainable and Inclusive Growth. Brussels. 03.03.2010. COM 722.
3. European Union Labour Force Survey (2009). Annual Results 2008. EUROSTAT.
4. Gruzevskis, B., Grazulis, V. (2009). Characteristics of Lithuanian Labour Market Policy Development // Viesoji politika ir administravimas, Nr. 28 (in Lithuanian).
5. Havlik, P. (2010). Structural Change, Productivity and Employment in the New EU Member States. Economic Restructuring and Labour Markets in the Accession Countries. Retrieved: http://ec.europa.eu/employment_social/employment_analysis/restruct/struct_change_case_en.pdf. Access: 22.01.2014.
6. Lithuanian Convergence Programme for 2011 and the National Reform Agenda (2011). Government Resolution No 491 of 27 April 2011. Retrieved: http://www.lrv.lt/bylos/veikla/lithuania2030.pdf. Access: 22.01.2014.
7. Jazepcikas, D., Raupeliene, A., Vitunskiene, V. (2009). Institutional Model of Employment System in a Rural Area // Rural Development 2009: the Fourth International Scientific Conference, 15-17 October, 2009, Akademija, Kaunas Region, Lithuania: Proceedings. Akademija: Lithuanian University of Agriculture. ISSN 1822-3230. Vol. 4, b. 1 (2009), [ISI Proceedings].
8. Ministry of Agriculture of the Republic of Lithuania (2004). Rural Development Plan for Lithuania 2004–2006. Vilnius.

9. Ministry of Agriculture of the Republic of Lithuania (2004). Single Programming Document, Priority 4 Rural Development and Fishery. Vilnius.
10. Ministry of Agriculture of the Republic of Lithuania (2007). Rural Development Programme for Lithuania 2007–2013. Vilnius.
11. Ministry of Finance Republic of Lithuania. (2009). Qualitative and Quantitative Evaluation of the Achieved Aims and Objectives of the Lithuanian Single Programming Document 2004-2006. Vilnius.
12. Operational Programme for Economic Growth for 2007–2013 (2007). Vilnius. Retrieved: http://www.esparama.lt/2007-2013/en/operational-programmes. Access: 22.01.2014.
13. Operational Programme for Human Resource Development for 2007–2013 (2007). Vilnius. Retrieved: http://www.esparama.lt/2007-2013/en/operational-programmes. Access: 22.01.2014.
14. Operational Programme for Promotion of Cohesion for 2007–2013 (2007). Vilnius. Retrieved: http://www.esparama.lt/2007-2013/en/operational-programmes. Access: 22.01.2014.
15. The European Employment Strategy (1999). Investing in People: Commission of the European Communities. Luxemburg: Office for official Publications of the European Communities.
16. Ziminiene, N. (2008). National Lisbon Strategy Implementation Programme Objectives in Employment Outcomes: Master's Thesis. Vilnius: MRU (in Lithuanian).
17. Zukovskis, J. (2009). The Evolution of Rural Development Goals and Objectives. // Management Theory & Studies for Rural Business & Infrastructure Development, Nr. 19 (4) – LZUU: VSI "Spalvu kraite" (in Lithuanian).

DEVELOPMENT OF RURAL SOCIAL INFRASTRUCTURE BASED ON COMMUNITY NEEDS[1]

Vilma Atkociuniene[+], Dr, professor
Aleksandras Stulginskis University

Abstract. Analysing development patterns of rural social infrastructure (hereinafter referred to as the RSI) and rural community needs, the uniqueness and coherences of these two phenomena are based in this article. The emphasis is laid on the methodological strengths and possible synergy, while the RSI management solutions are based on Maslow's A. hierarchy of needs. It is argued that the RSI can be developed focusing on the needs of rural communities, rooting one of the principles of the new public management, i.e. user-orientation. The survey result reflects the opinion of the residents of Alytus (Lithuania) region and shows the links between rural social infrastructure condition in the region and residents needs. The RSI management concept search for improvements is described in the paper.
Key words: rural social infrastructure development, rural community needs.
JEL code: M100, M380

Introduction

Approved documents of the European Union such as "Countryside Future Opportunities" (1988), the European Council Countryside Charter (1996), the Cork Declaration (1996), "The Agenda 2000" (1999) and programmes (LEADER[2] I (1991-1994), LEADER II (1995-1999), LEADER + (2000-2006), LEADER method (2007–2013), CLLD (2014–2020) highlight the development of rural areas. Rural areas are deemed as an essential part of the state's infrastructure, predetermining quality of life of both rural and urban citizens. Proper level of essential commodities, availability of every-day and periodic services, accessibility of periodic and episodic services shall be maintained within the rural areas showing up high level of social infrastructure. Though rural areas showed the increase only in the number of partially used premises of RSI organisations with rather insufficient designation and professionalism of their coordination, functions performed by the RSI organisations are imbalanced moreover. Weak local market could be named as the main reason preventing entrepreneurial initiative from the development of service sector in rural areas. Consequently, rural citizens face less favourable conditions as compared with citizens of urban territories.

Scientific problem: RSI management is inconsequential and unsystematised. Conventional RSI management solutions are insufficiently incorporated and are not directed towards the development of rural areas; they are made and implemented without paying reasonable attention to the long-term perspective, needs of citizens and future generations. The theoretical fundamentals formed up to this day are unusable for creation of innovative RSI management opportunities. The analysis of consistent patterns of RSI and rural community needs shall be defined and justified for this reason.

[1] The study was funded by the Lithuanian Science Council (Contract No MIP-004/2013). The author is thankful for the help of Lithuanian Science Council

[+] Corresponding author. Tel./fax. +370 37 752214
E-mail address: vilma.atkociuniene@asu.lt, vilma.atkociuniene@gmail.com

[2] Links between the rural economy and development actions

The object of research - consistent patterns of rural social infrastructure and rural community needs.

The research aim – to motivate a new model of rural social infrastructure development based on the analysis of rural residents needs and the development of rural social infrastructure patterns.

The tasks:

1) to summarise theoretical aspects of rural social infrastructure, rural residents and the development of community needs;
2) to identify links between the rural social infrastructure and the needs of residents in the context of the integrated development of rural areas;
3) to identify items of new RSI development model oriented towards the community needs.

The research is based on the positive research paradigm, descriptive analysis and empirical study methods. Non-fiction analysis is used in order to perform theoretical research and generalisation of scientific literature, logical and systemic reasoning, graphic presentation, abstracts, and other methods.

Research results and discussion

The consistent patterns of rural social infrastructure development and rural community needs

The following processes pose challenges for the RSI organisation: self-establishment in the market economy, restructuring, globalisation, development of techniques and technology, formation of an informational society, development of a knowledge economy, and change of the society economic situation and democratic processes. It is viewed as an operating system where RSI organisations' employees, i.e. human resources, become the most important and the most active part of the system, determining the efficiency of the pursuing of organisational goals.

Scientific claims of Ginevicius R., Paliulis N., Chlivickas E., Merkevicius J. (2006) that the organisation's competitiveness and economic level of society largely depends on the modernity of methods of human resource management in practice and on the coherence and rationality of management theories, can be applied to the RSI management. The RSI management involving many different actors should be oriented to the needs of the particular territory of the community which would motivate to participate in the development of RSI, i.e. development of demand and supply services.

Conceptual framework of the article is formed by different scientific studies conducted at various times and data included into them, which have analysed social infrastructure and its management principles. Generalised research data of Zalimiene L. (2003); Atkociuniene V. (2000; 2002; 2006; 2008); Benedict M.A. and McMahon E.T. (2007); Snieska V., Simkunaite I. (2009); Torrisi G. (2009); Williams P., Pocock B. (2010); Atkociuniene V., Vabolyte K. (2011); Snieska V., Zykiene I. (2010; 2011) as well as a Social Infrastructure Plan...(2006), Neighbourhood Changes (2011), Gladstone Social Infrastructure....(2011) programmes on rural social infrastructure show particular development trends of RSI conception.

The elements of social infrastructure in the United Kingdom (A Social Infrastructure Plan..., 2006) are: community facilities, community development, groups and organisations, grant funding, learning and skills development, volunteering, and other mutual support. Flora J. and other (1998) indicate that some rural communities have been successful in stabilising their business enterprises by stimulating local investments in the community's infrastructure, and producing an optimistic community spirit.

The RSI can still be seen as a part of the economy in relation to human needs and values as well as with the use of services. It is not a mechanical amount of different economic activities, objects but their complex, where all elements must be of adequate size, optimally placed to give good enough results (Atkociuniene V., 2008).

Swanson L. (1992) conceptualises social infrastructure as having three parts: 1) social institutions in a community such as local government, social service institutions, and voluntary organisations (churches, civic, recreational and political associations etc.); 2) human resources, which include attributes of inhabitants such as their technical expertise, organisational skills, educational levels, and the social structure - ethnicity, race and cultural qualities, gender and so on; and 3) characteristics of social networks in the community, including innovativeness, ability to mobilize resources within the community, ability to link up with outside expertise and information, and so on (Swanson L., 1992). One of the objects of rural social infrastructure on new conditions of rural Europe is *a partnership groups (in LEADER programme - Local action group)*, which fulfils the functions of rural social infrastructure, and their prepared integrated local development strategies based on resident needs (Atkociuniene V., 2006).

Snieska V. and Zykiene I. (2011) highlight the fact that social infrastructure level influences regional attractiveness to investors, residents, and tourists. The development of physical infrastructure cannot use it in overall development at the desired level if the social infrastructure is not simultaneously developed. The capacities and technical refinement of the physical infrastructure like roads, sewers, electricity, open spaces, gardens, and the evolving requirements of social infrastructures like shopping complexes, restaurants, medical facility zones, schools etc. are clearly delineated. Education, health, social security, public entertainment etc. have to be developed to ensure proper social infrastructure.

According to Lithuanian innovation institutional infrastructure levels highlighted by Zalimaite M., Balezentis A. (2012), one can assume that the institutional RSI reflects three levels: rural social policy, management of rural social changes, and rural social change support. Levels of rural social policy and management of rural social change involve the highest state institutions which develop integrated rural development policy and perform its public management. RSI organisations are ultimate integral part of rural development system. Organisations generating and organising services of social infrastructure develop the supply of services of RSI institutions, whereas, rural communities cultivate the demand.

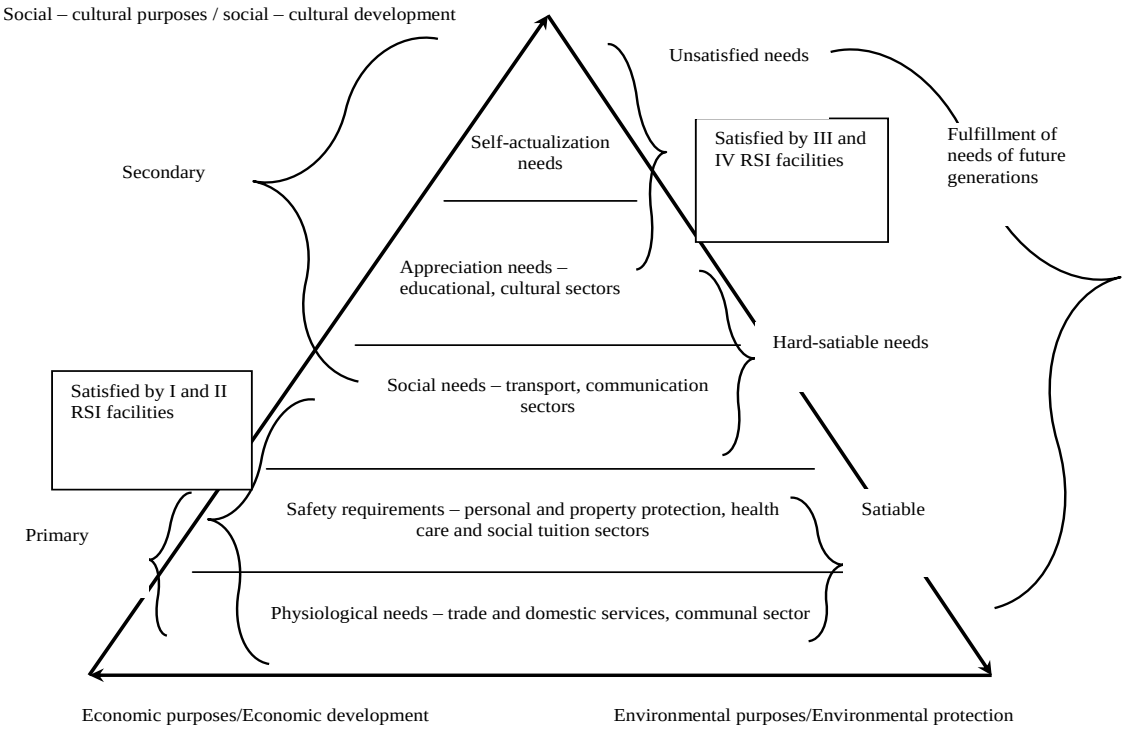
The RSI development is a formation of strong societies through the ongoing territorial development and public engagement activities, allocation of resources, enhancement of competences, and trustworthiness of human society groups, empowering them to take effective actions and take up dominant attitude (Firm Foundations…, 2004). While creating strong rural society, the abovementioned description shall be complemented in terms of service availability and accessibility, and the RSI development target itself should be considered.

In the analysis of personal needs, the level of satisfaction (availability) of needs is very important (Miller N., J., 2001; Atkociuniene V., 2008). The man never feels complete satisfaction of his needs. The emergence of new needs in higher levels of the hierarchy are in progress not because of absolute but because of sufficient satisfaction of existing needs in lower levels. Sufficient satisfaction of lower-level needs makes prerequisite for emergence of higher-level needs. However, the needs of hierarchy cannot be submitted to absolution. Distinction of levels of needs is more a scientific abstraction (Atkociuniene V., 2008). In reality, the levels of needs overlap one another.

The author of the article believes that the Maslow's A. (1943) personality theory shows the integrity of individual structure, expediency of its functions, and possibilities of behaviour and self-control

prognosis. A. Maslow had classified the needs stimulating human activities according to a certain hierarchy: physiological, safety, social, respect, and freedom of expression. One of RSI objectives is to reduce social exclusion, ensure meeting the basic needs of people which correspond A. Maslow's hierarchy of needs with the help of new public management measures. Theory of ranking of needs can be applied to the RSI development.

The RSI development is not a spontaneous process. This statement foresees the necessity to introduce particular changes into management process, which lately turns into the management solution and its implementation, redirecting the RSI and other activities towards the right direction and ensuring proper implementation of stated objectives (Kvedaravicius J., 2008).The application of the structural functional approach within the system of the multi-stage multi-functional RSI organisations allowed to classify it according to a hierarchical structure of user needs, the frequency of service use and level of differentiation as well as the development of sustainability dimensions of rural areas. The classification will help know consumers better, identify their needs, and foresee distribution of RSI facilities. There are five groups of rural resident needs (Figure 1) and four levels of RSI.



Source: author's construction based on Atkociuniene V., 2000; Ciegis R., Zeleniute R., 2008

Fig. 1. **Pyramid of rural resident needs and RSI sectors in order to achieve sustainability of rural areas development**

Intensity of resident needs complies with the need of classification structure in accordance with the consumption benefits and frequency. Purpose of Level 1 of RSI is to provide opportunities for the fulfilment of needs of prime necessity, of Level 2 – everyday needs, of Level 3 – periodical, and Level 4 – occasional needs (Atkociuniene, 2000). The first and second levels of RSI services are named as primary and shall be located as close as possible to rural residents. The third and the fourth levels of RSI services shall be located in local and regional centres. Moreover, all needs dedicated to one or another RSI level are merged and could not be added to a particular level.

The main focus of sustainable development is on the need to satisfy the needs of present generations but avoid compromising the interests of future generations by degrading the resource base (Our Common Future, 1987) and integration economic, social and environmental purposes. Sustainability of RSI might be obtained by the development based on rural community needs and green infrastructure principles.

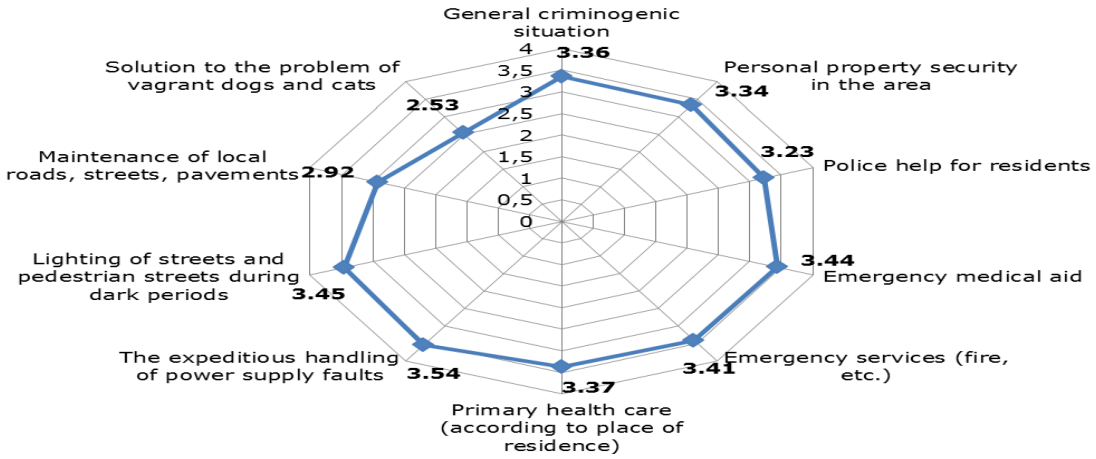
It is also clear that other themes in sustainable development can play an important part in developing community capacity and social capital. A study undertaken by the EQoL Group of the Milton Keynes and the South Midlands Inter regional Board on 'green infrastructure' sets out some important principles (Planning Sustainable Communities ..., 2005) linkage to the community needs: 1) green infrastructure should provide a focus for social inclusion, education, training, health and well being through community involvement and life-long learning; 2) encourage community involvement from the outset in design, implementation and care as local communities are often well placed to identify the type of infrastructure that suits their needs best and it helps ensure long-term management and ownership of infrastructure site; and 3) encourage the involvement of special interest groups as they can have a fundamental role in building strong local commitment to the changing landscape.

Coherences of rural residents needs with services of rural social infrastructure. Case of Alytus region

During the investigation, 383 residents were interviewed in Alytus (Lithuania) region. Most of the respondents were interviewed belong to the age groups of 46-55 and 36-45 years. It makes up 28% of all the interviewed people. The third large age group was people 16-25 years old, i.e. students and young people who made up 21.0% of all the respondents. The study involved a large group of servants (school and municipal employees), which accounted for almost half (48.0%) of all the respondents as well as 18.0% of the students and 16.0% of the workers were interviewed.

During research, the respondents assessed RSI service conditions from 1 to 5 points, where 1 expresses very bad RSI conditions, 2 - bad, 3 - satisfactory, 4 - good, and 5 - very good.

Figure 2 shows the estimation tendencies of service state insured by personal property security sector in Alytus region.

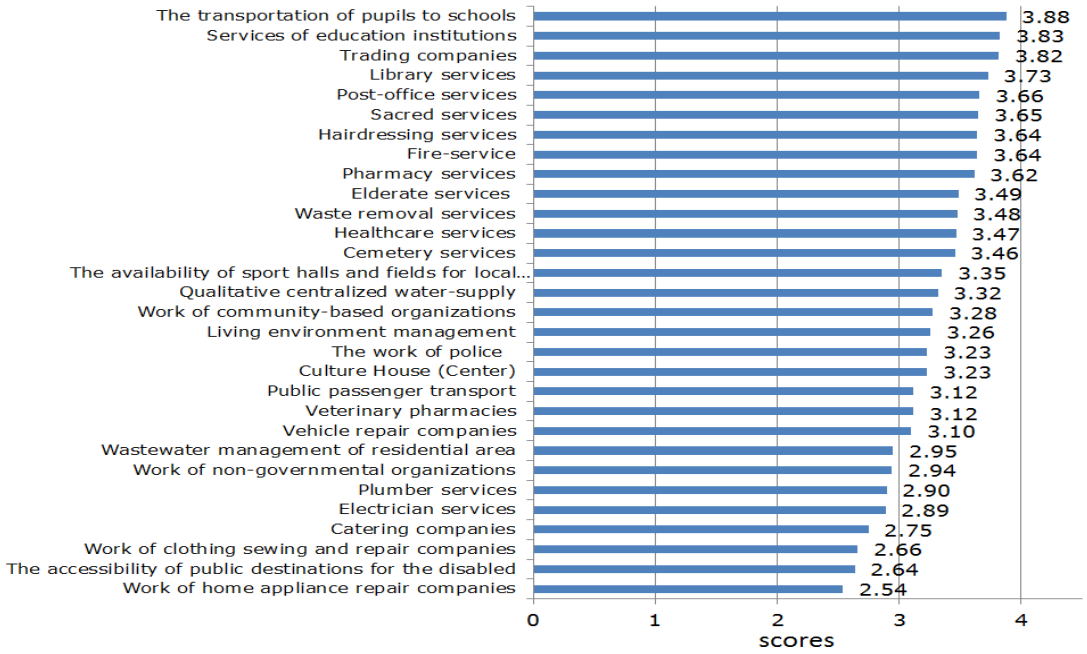


Source: author's construction based on the empirical research results

Fig. 2. **Expression strength of factors determining personal and property security, in points, 2012**

The operational management of the electricity supply failures (3.54 points) was best estimated by the respondents. The vagrant dogs and cats (2.53 points) as well as condition of local roads, streets and sidewalks (2.94 points) were named as the biggest problems by the rural residents.

The residents of Alytus region estimated the activity of RSI objects diversely (Figure 3). The average of estimation range was from 3.88 (transportation of pupils) to 2.54 points (home appliances repair companies work).



Source: author's construction based on the empirical research results

Fig. 3. **The conditions of rural social infrastructure services in Alytus region, estimation of rural residents, in points, 2012**

In conclusion, it can be said that the level of satisfaction of rural residents needs for RSI services is 65.8%. On the average, the RSI condition is estimated satisfactorily, i.e. 3.3 points. Compared with other RSI sectors, education, health care and social welfare sectors (the necessity and demand for the first daily service, which is provided by Levels 1 and 2 of the RSI objects) functions are the best in Alytus region. The first necessity needs such as local roads, streets, sidewalks, and lighting do not satisfy residents. Rural residents are particularly unhappy with their services during the winter. Communication, which is one of the key elements to ensure the quality of living of the residents and the availability of other RSI objects, strongly restricts periodic and episodic demand of availability of RSI services.

Conclusions

1. Rural Social Infrastructure means territorial and spatial system of interrelated economic and social activity types (which are not directly related with the production industry) and relations, establishing proper conditions for the ecosystem performance, creation of human, physical and social capitals to be used by individuals and the society itself for their private and social needs. The needs of rural community capacitate for harmonisation of RSI supply and demand.

2. One of the most underdeveloped transport and communication sector limits the needs of the rural residents' mobility and does not capacitate periodic and episodic needs to use other RSI services, as the bad local road conditions do not extend the radius of services accessibility.

3. Managing the development of social infrastructure in Alytus region, the main focus should be given to the harmonisation of RSI services supply and demand, and satisfaction of rural residents needs. The rural development actors in collaboration with each other should apply innovative methods of management: orientation towards results and needs of the residents, ranking the needs and hierarchy, public resource and volunteer work, coordination of mobile and stationary services, and implementation of information technologies. Access to RSI services can strengthen the local economy by improving the quality and accessibility.

4. In case of worsening of RSI services quality, the rural areas become unattractive not only for local residents but also for tourists and young people, which are aimed to be attracted to reside in rural areas. The RSI status may reduce the number of inhabitants in more remote rural areas in the future. RSI should be ahead of the needs of the rural residents and form the sustainable community.

Bibliography

1. A Social Infrastructure Plan for Voluntary and Community Action in the Milton Keynes and South Midlands Growth Area (2006). Strong Communities. MKSM Social Infrastructure Group. England.
2. Atkociuniene, V. (2002). *Kaimo socialines infrastrukturos prioritetiniai sektoriai ir pletros modelis* (Priorities and Development Model of Rural Social Infrastructure). Klaipeda: Tiltai.
3. Atkociuniene, V. 2006. *The Partnership Group as New Social Infrastructure for Sustainable Rural Livelihoods.* International scientific proceedings, Economics and Rural Development, No 2, pp. 13-18.
4. Atkociuniene, V. (2000). *Lietuvos kaimo socialine infrastruktura ekonominis vertinimas ir pletra* (Economic Evaluation and Development of Lithuanian Rural Social Infrastructure). Dissertation, LUA, Akademija.
5. Atkociuniene, V. (2008). *Consistent Patterns of Rural Community Development.* Community Development – a European Challenge, Verlag Barbara Budrich, pp. 147-179.
6. Atkociuniene, V., Vabolyte, K. (2011). *Alytaus rajono socialines infrastrukturos paslaugu prieinamumas kaimo gyventojams* (Social Infrastructure Services Access for Rural Population in Alytus District). Management Theory and Studies for Rural Business and Infrastructure Development: Research Papers. LUA, Klaipeda University. Akademija. No 2(26), pp. 14-21.
7. Benedict, M. A., Mcmahon, E. T. (2007). *Green Infrastructure: Smart Conservation for the 21st Century.* Retrieved: http://www.sprawlwatch.org/greeninfrastructure.pdf. Access: 05.01.2014.
8. Chlivickas, E., Papsiene, P. (2004). *Human Resource Management: the Integrated Guest Comparative Model.* Public Administration, No 3-4, pp. 37–44. Retrieved: http://www.lvalia.lt/INTERNETUI_2009-3-4(23).pdf. Access: 10.01.2014.
9. Ciegis, R., Zeleniute, R. (2008). *Ekonomikos pletra darnaus vystymosi aspektu* (Sustainable Development of Economics). Applied Economics: Systematic Research. No 2/1, pp. 37-54.
10. Firm Foundations – the Governments Framework for Community Capacity Building (2004). Home Office Statement in Community Capacity Building. England.
11. Flora, J., Sharp, J., Flora, C. N. (1998). *Entrepreneurial Social Infrastructure and Locally Initiated Economic Development*, Sociological Quarterly, 38(4), pp. 623-645.
12. Ginevicius, R., Paliulis, N. K., Chlivickas, E., Merkevicius, J. (2006). *XXI amziaus issukiai: organizaciju ir visuomenes pokyciai* (The Challenge of XXI Century: the Organisations and Society Changes). Vilnius: Technika.
13. Gladstone Social Infrastructure Strategic Planning Study: Gladstone Region Social Infrastructure E-Voluntary Industry Contributions Framework (2011). Retrieved: http://www.deedi.qld.gov.au/cg/resources/report/gladstone-sisp.pdf. Access: 10.01.2014.

14. Green Infrastructure Making the Connection. Retrieved: http://www.rnrpenvironmentalcharacter.org.uk/data/5.0%20GI_PARTS%201-3.pdf. Access: 10.01.2014.
15. Kvedaravicius, J. (2008). *Vadybos sampratos pletra ir praktine reiksme* (Management Concept Development and Practical Significance). Management of Organizations: Systematic Research. Kaunas: Vytautas Magnus University, No 46, pp. 61-69.
16. Maslow, A.H. (2006). *Motyvacija ir asmenybe* (Motivation and Personality). Vilnius: Apostrofa.
17. Miller, N.J. (2001). *Contributions of Social Capital Theory in Predicting Rural Community Inshopping Behaviour*. Journal of Socio-Economics, Issue 30, pp. 475–493.
18. Neighbourhood Changes. (2011). Retrieved: http://ec.europa.eu/world/enp/pdf/com_11_303_en.pdf. Access: 5 January 2014.
19. Planning Sustainable Communities - A Green Infrastructure Guide (2005), EQoL Group for Milton Keynes and the South Midlands.
20. Snieska, V., Simkunaite, I. (2009). *Socio–Economic Impact of Infrastructure Investments*. Engineering economics, No 3, pp. 16–25.
21. Snieska, V., Zykiene, I. (2010) *Viesoji infrastruktura: poveikio regioninei pletrai vertinimo ekonominiai aspektai* (Public Infrastructure: Measurement Issues of Effect on Regional Development). Economics and Management, No 15, pp. 241-247.
22. Snieska, V., Zykiene, I. (2011). *Fizines infrastrukturos itaka regioniniam patrauklumui* (Regional Attractiveness: does Physical Infrastructure Matter). Economics and Management, No 16, pp. 465–471.
23. Swanson, L. (1992). *Rural Social Infrastructure*. Foundations of Rural Development Policy. Edit. by Reid, J.N., Sears, D., Nelson, G., Rowley, J.T., Yetley, M., Boulder. CO: Westview Press.
24. Torrisi, G. (2009). *Public Infrastructure: Definition, Classification and Measurement Issues*. Working paper.
25. Our Common Future: Development and International Co-operation (1987). World Commission on Environment and Development, New York, United Nations.
26. Williams, P., Pocock, B. (2010). *Building Community for Different Stages of Life: Physical and Social Infrastructure in Master Planned Communities*. Community Work and Family. Vol. 13, No 1, pp. 71-87.
27. Zalimaite, M., Balezentis, A. (2012). *Lietuvos inovaciju infrastruktura: strukturinis funkcinis poziuris* (Innovation Infrastructure of Lithuania: Structural Functional Approach). Public policy and administration, Volume 11, NO 2, pp. 198-212.
28. Zalimiene, l. (2003). *Socialines paslaugos* (Social Services). Vilnius: Vilnius University.