



Latvia University  
of Life Sciences  
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Nordic Association  
of Agricultural  
Science



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**Faculty of Economics and Social Development**

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# **ECONOMIC SCIENCE FOR RURAL DEVELOPMENT**

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## Time schedule of the conference

**Preparation of the proceedings and organization:** January 2020 – May 2020

**Conference:** 12-15 May 2020

Researchers from the following higher education institutions, research institutions, and professional organizations presented their scientific papers at the conference:

Baltic International Academy	Latvia
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Batumi Shota Rustaveli State University	Georgia
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Latvia University of Life Sciences and Technologies	Latvia
Latvian State Forest Research institute "Silava"	Latvia
Latvian State Institute of Wood Chemistry	Latvia
Latvian Trade Union of Education and Science Employees (LIZDA)	Latvia
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National University "Yuri Kondratyuk Poltava Polytechnic"	Ukraine
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National University of Life and Environmental Sciences of Ukraine	Ukraine
Poltava University of Economics and Trade	Ukraine
Rezekne Academy of Technologies	Latvia
Riga Stradins University	Latvia
Riga Technical University	Latvia
RISEBA University of Applied Sciences	Latvia
Ryazan State University named after S.A. Yesenin	Russia
Saeima of the Republic of Latvia	Latvia
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Saratov State Vavilov Agrarian University	Russia
Slovak University of Agriculture in Nitra	Slovakia
Southern Federal University	Russia
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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)*.

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***Editorial Board***

## Foreword

The international scientific conference „Economic Science for Rural Development“ is organized annually by the Faculty of Economics and Social Development of Latvia University of Life Sciences and Technologies.

The proceedings of the conference are published since 2000.

The scientific papers presented in the conference held on 12–15 May 2020 are published in one thematic volume:

**No 53** Bioeconomy  
Production and Co-operation in Agriculture  
Finance and Taxes  
Rural Development and Entrepreneurship

The proceedings contain scientific papers representing not only the science of economics in the diversity of its sub-branches, but also other social sciences (sociology, political science), thus confirming inter-disciplinary development of the contemporary social science.

This year for the first time the conference includes the section on a new emerging kind of economy—bioeconomy. The aim of bioeconomy is to use renewable biological resources in a more sustainable manner. Bioeconomy can also sustain a wide range of public goods, including biodiversity. It can increase competitiveness, enhance Europe's self-reliance and provide jobs and business opportunities.

The Conference Committee and Editorial Board are open to comments and recommendations concerning the preparation of future conference proceedings and organisation of the conference.

## Acknowledgements

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

**Anita Auzina**

Associate professor of Faculty of Economics and Social Development  
Latvia University of Life Sciences and Technologies

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## **BIOECONOMY**

## PLANTATION FORESTS AS REGIONAL STRENGTH FOR DEVELOPMENT OF RURAL BIOECONOMY

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**Abstract.** The establishment of plantation forests in areas not viable for agriculture can make a significant contribution to the economy. The yield from 1 ha of plantation forest depends on the management purpose - obtaining of round wood (pulpwood, sawnlog, veneer log, tare), bioenergy and extraction of tree foliage (broadleaved and coniferous). In Latvia, based on 2019 data, plantation forests achieve 2760 ha of Scots pine, 7855 ha of Norway spruce, 7431 ha of Birch, 2123 ha of Grey alder, 1274 ha of Black alder and *Populus spp.* and 618 ha of *Salix spp.*

Estimated and projected gains are calculated both as round wood over 20 to 50 years: pine - 410-to 994 thou. m<sup>3</sup>; spruce, - 335 to 2.906 thou. m<sup>3</sup>, birch - 1.040 -2.452 thou. m<sup>3</sup>. Accordingly, it is possible to obtain gross income from the whole plantation forest area in Latvia: pine-12.42-63.8 mln. EUR; spruce - 40.1 -192.3 mln. EUR; for birch - 32.2 -202.7 mln. Eur. Additionally to that, 18.6 -21.6 t ha<sup>-1</sup> and 24.0 -37.0 t ha<sup>-1</sup> of processed foliage can be obtained from 1 ha of pine and spruce forest plantations (40-50 years old). *Alnus incana sp.* (5-20 years), yielding 19.65-122.65 thou. Solid m<sup>3</sup> and *Salix spp.* (3-5 years), yielding 58.71-84.97 thou. solid m<sup>3</sup>, are used for energy production, furthermore *Alnus spp.* wood can be used than valuable raw material for plywood production. At the same time, it is possible to capture 106-1477 thou. tonnes of CO<sub>2</sub> equivalent. Systematic investigations of chemical composition of above mentioned Latvian plantation trees, wood and bark, have shown that incorporation of extraction treatment in existing processing schemes will allow to manufacture high value added monomeric and oligomeric products which are of great demand for substitution of synthetic ones in different economy sectors (agriculture, including means for plant protection, food industry, polymer production, pharmacy etc.). Creation of small and medium-sized enterprises in rural region in close proximity to plantations opens the opportunity for the appearance of new working places, including organization of new nurseries, plantation services, private businesses for processing of various lignocellulosic waste into new special products / semi-products / feedstock for green industrial materials and chemicals, at the same time diminishing the logistics expenses.

**Key words:** plantation forest, coniferous, deciduous species, productivity, biomass diversity, biomass extraction, socio-economic impact, net income, CO<sub>2</sub>.

**JEL code:** R11

### Introduction

The Sustainable Development Goals, the Paris Climate Agreement, the European Forest Process, as well as EU goals and policies, set new requirements for European forests. These include helping to mitigate climate change, provide goods and services, create jobs and act as a source of fuel and raw materials. The development of an innovative, sustainable bioeconomy is a key strategy and forestry is expected to play a major role in providing the raw materials and services needed in Europe. There is new evidence that sustainable management of plantations, especially as part of the landscape-scale mosaic, has great potential in the context of new European policy priorities. Scientific evidence on how best to achieve these goals while achieving multifunctionality and maximizing synergies between ecosystem services is key to the success of future forestry programs (Freer-Smith et al. 2015; Baunhus et al., 2011; Pagnette and Messier, 2010; Payn et al., 2015, Botto et al., 2016).

Plantation forests can be defined as "forest or other wooded land with native or introduced tree species created by planting or sowing" (FAO, 2006). The importance of forest plantations is reflected in the "Forestry Principles" adopted by the United Nations Conference on Environment and Development (UNCED) in Brazil in 1992 and reiterates the importance of heavily managed forest

plantations. Principle 6d states: "The importance of cultivated forests as a sustainable and environmentally friendly source of renewable energy and as industrial raw materials should be recognized, enhanced and promoted. Their contribution to maintaining ecological processes, relieving pressure on primary / natural forests and ensuring regional employment and development must be recognized and improved. (Keenan et al., 2015; Freer-Smith et al., 2019).

Plantation forest functions and services are diverse. For example, the FAO distinguishes between 'productive' and 'protective' plantations (Penna, 2010). Production plantations are mainly focused on the production of industrial wood, fuel wood and other wood products (animal fodder, beekeeping, essential oil, bark, cork, latex, food), while protected plantations are designed to provide conservation, recreation, carbon sequestration, water quality control, erosion control, and degradation of degraded lands, which also includes improving landscapes and landscaping (Freer-Smith et al., 2019; Savill et al., 2009).

Plantation forestry is also shifting from large-scale monoculture to smaller-scale or medium-sized areas where local households and communities are owners or co-owners and are employed in plantation forest management (Freer-Smith et al. 2019). The forest areas planted in the former agricultural lands in Latvia are not large. A total of 48,547 ha of forest stands planted on agricultural land for 20 years (1999-2018), of which 21,231 ha were declared as plantation forest. The data show that if forest stands were mostly planted at the beginning of the period (1999), only from 2015 plantation forest dominates over planted forest stands on former agriculture areas. State Forest Service data show that the most often planted tree species is spruce – 36 %, birch – 35 %, common pine – 13 % of the total planted amount (Latvian Forest Sector in facts & figures 2020, [https://www.zm.gov.lv/public/ck/files/ZM/mezhi/skaitlifakti\\_ENG20.pdf](https://www.zm.gov.lv/public/ck/files/ZM/mezhi/skaitlifakti_ENG20.pdf)). Meanwhile, according to the Forest Monitoring and LVMI Silava research data, in the period 1993-2013 - about 233 thousand ha of uncultivated agricultural land is naturally afforested (Lazdins, 2011). According to Rural Support Service Republic of Latvia data, as of 1 October 2019, untreated agricultural land in Latvia still constituted 256 179.66 ha (<http://www.lad.gov.lv/lv/atbalsta-veidi/noderigi/lauksaimnieciba-izmantojamas-zemes-apsekosana-1/>).

Based on MEA (2005) and scientists, ecosystem services and services are grouped here in four main categories: Production functions; Regulatory functions; Recreational functions; Ecosystem services; Ecological assessment (<https://www.millenniumassessment.org/en/index.html>; de Groot et al., 2002).

On 20 December 2012, the National Development Plan of Latvia 2014-2020 was adopted, which requires the rational use of land (Latvian National Development Plan, 2012). The Latvian State Land Service (SLS) is developing guidelines for land use policy in Latvia. This document defines its objectives, directions and ways of achieving these objectives ([http://www.varam.gov.lv/in\\_site/tools/download.php?file=files/text/Sab\\_lidzdaliba/sab\\_apsp//VARAM\\_Zemes\\_politikas\\_plans\\_211116.pdf](http://www.varam.gov.lv/in_site/tools/download.php?file=files/text/Sab_lidzdaliba/sab_apsp//VARAM_Zemes_politikas_plans_211116.pdf)). The document states, that "measures and incentives should be developed for the afforestation, ecological and landscaping of non-farm lands, contributing to the preservation of traditional rural landscapes", as well as forestry, tourism etc. Currently, the National Development Plan of Latvia for 2021-2027 is being updated, where one of the priority measures is to raise the standard of living and quality of population by increasing employment and income" (<https://www.pkc.gov.lv/en/aktualitates/expert-groups-have-initiated-national-development-plan-2021-2027-year-detailed>).

Research on plantation forest and tree planting possibilities in unmanaged agricultural lands in Latvia is still ongoing (Daugaviete et al., 2017). Scientists are studying optimal growing conditions for different tree plantations (*Pinus spp.*, *Picea spp.*, *Betula spp.*, *Populus spp.*, *Alnus spp.*, *Salix spp.*), methods for plantation establishment and subsequent productive management (Lazdina & Daugaviete, 2010; Daugaviete et al., 2017).

Long-term studies show that the selection of suitable soil for planting forest, short rotation plantations of relevant tree species (*Pinus spp.*, *Picea spp.*, *Birch spp.*, *Populus spp.*, *Alnus spp.*, *Salix spp.*) significant benefits in the short term- both economically and ecologically (Lazdins, 2011; Daugaviete, et al., 2017).

Current paper reflects results of potential incomes from production function.

Research objective is to identify and evaluate the value and benefits of short-rotation plantations and plantation forests on different soil types for *Latvian rural development* and possibility to obtain high value-added products by integration of extraction as an intermediate additional unit into production of final fuel wood.

## **Materials and methods**

Plantation productivity - yield, output (pulpwood, sawdust, veneer log, tare log, woodchip, etc.) was calculated both by plantation survey and pronation of plantation stock up to management target output (Lazdiņa & Daugaviete, 2010; Daugaviete et al., 2017).

Estimation of income from establishment, management and production of short-rotation tree plantations and plantation forests to assess potential economic benefits. Data from the Central Statistical Bureau database ([www.csp.gov.lv](http://www.csp.gov.lv)) have been used. Carbon content in wood is assumed to be 50% on average according to good practice guidelines for the calculation of CO<sub>2</sub> capture and GHG emissions in land use, land use change and forestry (Liepins, 2020). The conversion of carbon (C) storage to CO<sub>2</sub> has been made by multiplying C tonnes by 44 and dividing the result by 12 (Lazdins, 2012, Liepins, 2020).

Qualitative and quantitative liquid chromatography alongside with complex of physical-chemical and wet chemistry methods were used as tools which allowed to evaluate potential of the Latvian plantation trees (in particular, deciduous trees as black & grey alder, willow) as a source of high value added biologically active compounds (Telysheva et al. 2018, Lauberte et al. 2017, Janceva et al. 2017, Ponomarenko et al. 2014, Lauberts et al. 2018).

## **Research results and discussion**

### **1. Productivity and potential economic income**

Forecasting the sustainable development of plantation forests and their benefits for the Latvian economy, the survey of the first 20 years, current research results and current norms for forest taxation in the Republic of Latvia have been taken into account (Daugaviete et al., 2017).

Studies show that the growth rate of the most common tree species planted on agricultural land in young plantations corresponds to the Ia site index parameters, therefore in future forecasts Ia site index data were taken in pine, spruce, birch, black alder and grey alder stands (Daugavietis et al. 2013; Donis, 2014). Forecasts show that the management of plantations of the most common tree species in Latvia (pine, spruce, birch, grey alder, black alder) can result in a significant increase in wood yielding significant current assets for the economy (Table 1).

Table 1

**Potential wood stock from plantation forests, m<sup>3</sup>**

Tree species	Area of plantations, ha	Growing stock, m <sup>3</sup> .ha <sup>-1</sup> / thou. m <sup>3</sup> (m <sup>3</sup> * area <sup>-1</sup> )			
		During 20 years	During 30 years	During 40 years	During 50 years
<b>Pine</b>	2760	150/410	240/662	310/856	360/994
<b>Spruce</b>	7855	170/1335	250/1964	300/2356	370/2906
<b>Birch</b>	7431	140/1040	200/1486	250/1858	330/2452
<b>Grey alder</b>	2123	150/319	240/509	-	-
<b>Black alder</b>	1274	170/217	240/306	300/382	330/420

Estimated revenue is calculated by taking into account the distribution of extracted wood according to the wood and assortments (Lipins & Liepa, 2007) as well as the average (2016-2018) prices of timber (<https://www.csb.gov.lv/lv/statistika/statistikas-temas/lauksaimnieciba/mezsaimnieciba/meklet-tema/2616-apalo-kokmaterialu-videjas-iepirkuma-cenas>; [http://latkoks.lv/?page\\_id=2927](http://latkoks.lv/?page_id=2927)).

Table 2

**Estimated gross revenue from plantation forests (NPV), mln. EUR**

Tree species	Estimated revenue, Eur.ha <sup>-1</sup> / Total revenue EUR mln. EUR			
	During 20 years*	During 30 years**	During 40 years***	During 50 years****
<b>Pine</b>	4500/12.42	7488/20.7	19401/53.5	23102/63.8
<b>Spruce</b>	5100/40.1	10143/79.7	19489/153.1	24487/192.3
<b>Birch</b>	4340/32.2	7650/56.8	11500/85.5	27281/202.7
<b>Grey alder</b>	3975/8.4	7291/15.5	-	-
<b>Black alder</b>	4505/5.7	7180/9.1	10466/13.3	12198/15.5

*Explanation: \* Pine, Norway spruce, Birch, Grey alder, Black alder- 50 % pulpwood, 50 %-fire wood; \*\* Pine – 65 % pulpwood, 35 %- firewood; Norway spruce- 42 % pulpwood, 42 % roundwood, 16 %- firewood; Birch – 35 % pulpwood, 35 %-roundwood, 30 %- firewood; Grey alder- 30 % pulpwood, 37 % roundwood, 33 % firewood; Black alder- 30 % pulpwood, 37 %-roundwood, 33 % - firewood; \*\*\* Pine- 85 % sawntimber, 20 % pulpwood, 5 % firewood; Norway spruce – 85% sawntimber; 20% pulpwood, 5% firewood; Birch – 72% veener log; 17 %-pulpwood; 11 % firewood; Black alder- 71 % sawn timber; 20 % pulpwood; 9 % - firewood; \*\*\*\* Pine – 86 % sawnwood, 14 % pulpwood, 10 %- firewood; Norway spruce-90 % sawntimber, 5 % -pulpwood, 5%- firewood; Birch- 70 % veener log, 20 %-sawn timber, 10 %- firewood; Black alder – 62 % sawntimber, 30 % pulpwood, 8 % firewood*

As Table 2 shows, plantation forestry is a significant source of income and employment. Expected income for the first 20 years of management (in the form of felling stock) is for spruce plantations, followed by pine, black alder and birch plantations. In later years, 30-40-year-old plantations can be marked as the most productive spruce and birch plantations, because it is possible to obtain both high quality logs and plywood for the production of plywood. Table 2 also estimates the income for 50-year-old plantations, but it is likely that only pines will grow until the age of 50, as yield and income growth is only 8 % compared to 40-year-old pine plantations. Birch plantations show the highest revenue growth in calculations, but this is achieved with the cost of Class A plywood blocks, as the difference in price per m<sup>3</sup> of Class A and Class B plywood shows a 60% increase.

**2. Short rotation plantations and tree plantations to provide renewable resources**

The contribution that can be gained from short-rotation plantations and tree agriculture practice management (Law on Agriculture and Rural Development, in force since 16 October 2014) is essential

for the provision of renewable energy. The most promising tree species: osier, willow (*Salix spp.*), Grey alder (*Alnus spp.*), Poplar (*Populus spp.*), Hybrid aspen (*Populus hybrids*).

The management of grey alder stands for the production of woody biomass occupies an important place in Latvia. Analysis of the growth of grey alder stands shows that grey alder is suitable for the production of woody biomass in short rotation plantations (Daugaviete et al. 2017). Studies have shown that in 5-20-year-old white alder forest stands it is possible to obtain an average of 47-286 solid m<sup>3</sup> ha<sup>-1</sup>.

Between 1999 and 2018, 2123 ha of grey alder afforested or formerly naturally afforested agricultural land were declared as plantations. Currently, willow plantation management is expanding in Latvia as well (Lazdins, 2011; Lazdiņa&Daugaviete, 2010; <https://www.zemeunvalsts.lv/karkli-resursi-plantacija-iespejas>). 618 ha of willow plantations are officially registered in Latvia. When calculating the resources and income of willow and grey alder plantations, it must be concluded that it is necessary to increase the area of willow as well as to manage grey alder in forest areas as potential biomass producers (Table 3).

Table 3

**Short rotation plantation resource and revenue forecasts, m<sup>3</sup>, thou. EUR**

	<b>Willow plantation rotation 3-5 years</b>	<b>Grey alder plantations (5-20 years)</b>
<b>Area to be developed, ha</b>	618	2123
<b>Obtained biomass t ha<sup>-1</sup></b>	28.50-41.25	14.82-92.43
<b>Potential biomass yield, thou. t plantation area<sup>-1</sup></b>	17.61-25.49	31.46-196.23
<b>Potentially obtained thou., solid m<sup>3</sup> plantation area<sup>-1</sup></b>	58.71-84.97	19.65-122.65
<b>Revenue, EUR ha<sup>-1</sup></b>	906 -1310	470 - 1174
<b>* Revenue, thou. EUR area<sup>-1</sup></b>	560 -810	998 -2492

\* <http://www.balticforest.lv/cenas> , <http://www.latvianwood.lv>

**3. Production of non-wood products**

One of the benefits of plantation forests is the use of non-wood products. The big impact in this field in Latvia was made by manufacture of valuable products by extraction of biologically active compounds from the foliage of coniferous trees and working out and manufacture on its basis of new valuable products (Daugavietis, 2013; Polis & Spalvis, 2013). Studies on the amount of conifer green foliage show that 100 ± 20 kg of spruce foliage and 80 ± 10 kg of pine foliage can be obtained per m<sup>3</sup> of wood (Daugavietis, 2013; Daugaviete & Korica, 2013; Polis&Spalvis, 2013), the processing of which into valuable ecological products ([www.biolat.lv](http://www.biolat.lv)) can make a significant contribution to the economy (Table 4).

Besides the foliage, unique composition of bark biomass allows to obtain numerous value-added products (individual compounds and mixtures of synergetic activity) that allows to consider tree bark as the classic object for biorefinery. The yield of bark varies from 2-4 % up to 10-12 % and more from the total tree biomass (depending on tree species and age) that makes the bark very promising resource for technological processing.

The lack of knowledge about composition, properties of biomass to be extracted and extract-oriented efficiency of green solvents to be used according to current safety requirements as well as necessity to improve existing extraction devices efficiency underpin modern investigations all over the world. In our case, the microwave assisted extractor of original design allowed to obtain promising results for the mentioned purposes at the decreased consumption of energy, solvents and

duration of process. After full extraction cycle bark residues could be used for bio-pellets production with improved calorific properties (Arshanitsa et al. 2016, Janceva et al. 2017).

Currently, on the basis of investigations of the Latvian deciduous plantation tree bark, different products for industry, agriculture and human health are developed. Among them, there are effective antioxidants, food supplements, cosmetic creams, including sun protection means, adhesives for wood particle boards, hydroxyl-rich polymer building blocks for polymers synthesis and polyurethane composite materials for thermoinsulation, fuel pellets, which all meet the requirements of EU standards (Telysheva et al. 2018, Arshanitsa et al. 2010, Andersone et al. 2018). Even more species are suitable for obtaining of specific compound groups, and individual compounds, in particularly *Salix* for salicin and proanthocyanidins and alder bark for diarylheptanoids and proanthocyanidins.

On the basis of oregonin-rich extract from alder, the food-supplement "Orvital" was produced as a commercial product (three cosmetic creams were produced and sold through pharmacies (registered in the Latvian food and veterinary service).

For realization of opportunities that are opened at the processing of bark in the context of biorefinery, cooperative net of SME engaged in processing is necessary. Whereas plantations could be considered as bioeconomy key points: drivers, primary feedstock suppliers, and in some case consumers (of the means necessary for plant healthening).

Studies on the amount of conifer green foliage show that  $100 \pm 20$  kg of spruce foliage and  $80 \pm 10$  kg of pine foliage can be obtained per  $m^3$  of yield (Daugavietis, 2013; Daugaviete & Korica, 2013; Polis&Spalvis, 2013), the processing of which into valuable ecological products (www.biolat.lv) can make a significant contribution to the economy (Table 4).

Table 4

**Estimated revenue from coniferous green foliage use in plantation forests**

	Tree species	
	Pine	Spruce
<b>Area to be developed, ha</b>	2760	7855
<b>Harvested stocks (40-50-year.) <math>m^3 ha^{-1}</math></b>	310-360	300-370
<b>Green biomass obtained from 1 <math>m^3</math> timber, kg</b>	50-60	80-100
<b>Green biomass obtained from 1 ha, t</b>	18.6 – 21.6	24.0-37.0
<b>Revenue from 1 t of processed lingon products, EUR</b>	2000	910
<b>Estimated income from 1 ha plantation, thou. EUR <math>ha^{-1}</math></b>	37.2 -43.2	21.8-33.7
<b>Estimated income from plantation area, mln. EUR</b>	102.7 -119.2	171.2- 264.7

**4. Greenhouse effect mitigation options**

During the climate change period, the amount of carbon dioxide captured by plantation forests is an important contribution, thus reducing the greenhouse effect in the atmosphere (<https://lzf.lv/en/sildumnicas-efekts>; Lazdins, 2012; Liepins, 2020). In sustainably managed forests, carbon accumulation never stops, as new trees replace felled trees. In the felled tree, carbon is still attached - as a "storage" of carbon. Young stands attract  $CO_2$  very strongly and use it for growth (Lazdins, 2012; Jansons, 2017; Daugaviete et al., 2008; Liepins, 2020).

In the forests managed by LVM (Latvian State Forests), every year the forests attracts 4.1 million. tons of carbon or 15 mln. tons of  $CO_2$  eq., but the total storage in living biomass or in all forests managed by LSF (Latvian State Forests) is 123 mln. tons of carbon or 450 mln. tons of  $CO_2$  eq. (The conversion factor for emissions from carbon to carbon dioxide is 3.67) (Lazdins, 2012)

LSFRI Silava scientist J. Liepins (2020) has carried out extensive literature analysis, evaluating the results of 31 scientific studies from around the world on changes in carbon content between different regions, conifers and deciduous groups and concluded that regardless of climatic region the carbon content of conifers ( $50.8 \pm 0.7$  %) is significantly higher in wood than in deciduous trees ( $47.7 \pm 0.3$  %). When evaluating the data, it is recommended that, since there is still no conclusive data on the wood carbon content to be used in the hemiboreal forest zone, mean values for coniferous and deciduous trees are most stable,  $50.8 \pm 0.6$  % and  $48.8 \pm 0.6$  %, respectively, Thomas & A.R. Martin (2012) recommends moderate and boreal band.

Table 5

**Estimated amount of carbon sequestered in plantation forests, thou, t CO<sub>2</sub> equivalent**

Tree species	Area of plantations, ha	CO <sub>2</sub> t/ha <sup>-1</sup> , t * area <sup>-1</sup>			
		During 20 years	During 30 years	During 40 years	During 50 years
<b>Pine</b>	2760	76/210	122/337	157/435	183/505
<b>Spruce</b>	7855	86/675	127/998	152/1193	188/1477
<b>Birch</b>	7431	68/505	98/728	122/906	161/1196
<b>Grey alder</b>	2123	73/155	117/248	-	-
<b>Black alder</b>	1274	83/106	117/149	146/186	161/205

According to the data of Table 5, the relatively small amount of plantation forests in Latvia is capable of attracting a relatively large amount of CO<sub>2</sub> and varies from 106 thou. CO<sub>2</sub> equivalent up to 1.48 mln. CO<sub>2</sub> equivalent.

**Conclusions, proposals, recommendations**

- 1) The establishment of plantation forests in areas, which are not viable for agriculture can make a significant economic contribution to the economy. The yield from 1 ha of plantation forest depends on the management purpose - extraction of roundwood (pulpwood, sawlog, veneer log, tare) or biomass (energy wood).
- 2) The yield of pine plantations during the forest management period of 20-50 years at the forecasted volume ( $150-360 \text{ m}^3 \text{ ha}^{-1}$ ) amounts to 4.5 (20 years) to 23.1 (50 years) thou. EUR ha<sup>-1</sup> or at the existing plantation area (2760 ha) - 12.42 -63.8 mln. EUR.
- 3) The yield from spruce plantations in the forest management period 20-50 years at the forecasted volume ( $170-370 \text{ m}^3 \text{ ha}^{-1}$ ) amounts to 5.1 (20 years) to 24.5 (50 years) thou. EURha<sup>-1</sup> or at the existing plantation area (7855 ha) - 40.1 -192.3 mln. EUR.
- 4) The yield from birch plantations during the forest management period 20-50 years at the forecasted volume ( $140-340 \text{ m}^3 \text{ ha}^{-1}$ ) amounts to 4.3 (20 years) to 27.3 (50 years) thou. EUR ha<sup>-1</sup> or at the existing plantation area (7431 ha) - 32.2 -202.7 mln. EUR.
- 5) Benefit from Grey alder short-rotation plantations for energy wood production with 5-20 year circulation is  $14.82-92.43 \text{ t ha}^{-1}$ , potential yield biomass at existing plantation area (2123 ha) is 19.65-122.65 thou. solidm<sup>3</sup> or 998 -2,492 thou. EUR, respectively.
- 6) The yield from short-rotation plantations of willow (*Salix* spp.) for energy wood production with 3-5 year circulation is  $28.5-41.25 \text{ t ha}^{-1}$ , the potential biomass at existing plantation area (618 ha) is 58.71-84.97 thou. m<sup>3</sup> or in cash 560 - 810 thou. EUR, respectively.
- 7) Results of hardwood bark obtained from fast growing trees showed good prospects for integration of extraction cluster into existing streams of fast growing hardwood tree biomass biorefinery.

- 8) From 1 ha of pine and spruce plantation forest (40-50 years old) it is possible to obtain 18.6-21.6 t ha<sup>-1</sup> and 24.0 -37.0 t ha<sup>-1</sup> of green foliage respectively; from 1 t foliage processing it is possible to obtain production for 2000 EURt<sup>-1</sup> and 910 EUR t<sup>-1</sup>, gross income reaches 37.2 -43.2 thou. EUR ha<sup>-1</sup> and 21.8 -33.7 thou. EUR ha<sup>-1</sup>, gross income 102.7 to 119.2 mln. EUR and 171.2-264.7 mln. EUR. of the whole plantation area, respectively.
- 9) The projected amount of carbon leakage in existing plantation forests is calculated from 106 thou. t CO<sub>2</sub> equivalent up to 1.477 thou. t CO<sub>2</sub> equivalent with a 20-50 year plantation cycle.

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### Bibliography

1. Andersone, A., Arshanitsa, A., Solodovnik, V., Kampars, V. (2018). Pelletizing of Bark Residue Resulting from Debarking of Softwood Trees. *Key Engineering Materials*, 2018, 762, pp.115-120.
2. Arshanitsa, A., Akishin, Y., Zile, E., Dizhbite, T., Solodovniks, V., Telysheva, G. (2016). Microwave treatment combined with conventional heating of plant biomass pellets in a rotated reactor as a high rate process for solid biofuel manufacture. *Renewable Energy* (91), 2016, pp. 386-396.
3. Arshanica, A., Barmina, I., Andersone, A., Telysheva, G., Zake, M. (2010). Processing and Complex Research of the Main Characteristics of Pelletized Lignocellulosic Materials for Clean and Effective Energy Production. *International Scientific Colloquium "Modelling for Material Processing"*, Riga, September 16-17, 2010, pp. 151-155
4. Baunhus, J., Meer, P., J. and Knninen, M. (Edit.). (2010). *Ecosystem Goods and Services from Plantation Forests*. 2010. EARTHCCAN, London, Washington, 274 p.
5. Botto, L., Pettenella, D, Cerutti, P and Pirard, R. (2016). *Planted Forests in Emerging Economies: Best Practices for Sustainable and Responsible Investments*. Occasional Paper 151. Bogor, Indonesia. Retrieved: [https://www.cifor.org/publications/pdf\\_files/OccPapers/OP-151.pdf](https://www.cifor.org/publications/pdf_files/OccPapers/OP-151.pdf) .Access: 30.04.2020.
6. Daugaviete, M., Bambe, B., Lazdiņš, A. and Lazdiņa, D. (2017). *Growth and Productivity of Plantation Forests*. LSFRI Silava, p. 462. (In Latvian).
7. Daugaviete, M., Gaitnieks, T., Kļaviņa, D., un Teliševa, G. (2008). *Carbon Accumulation in the Above-Ground and Root Biomass of Pine, Birch and Spruce Cultivated in Agricultural Soils*. *Mežzinātne* 18, 35-52. (In Latvian).
8. Daugaviete, M. and Korica, A. (2013). *The Impact of Tree Foilage Utilization on Mineral Substance Turnover in Forest Ecosystems*. Conference Proceedings. 13th International Multidisciplinary Scientific Geoconference SGEM 2013 16-22 June, Albena Co., Bulgaria: pp.797-800.
9. Daugaviete, M., Lazdins, A., Lazdina, D., Makovskis, K. and Daugavietis, U. (2017). *Growth and Yield of 15-Year Plantations of Pine, Spruce and Birch in Agricultural Land*. *Rural Sustainability Research* 37(332), 2017, 38-50 pp.
10. Daugavietis, M. (2013). *Latvia Experience: Potential for Tree Nonwood Biomass Utilization*. 13th SGEM Geo Conference on Water Resources, Forest, Marine and Ocean Ecosystem. Conference proceedings vol. 1, 353-360 pp.
11. Donis, J. (2014). *Improved Site Index Scales for the Most Important Forest Species in Latvia*. In. „Four Motives of Forest Science“ LVMI Silava: 13-36. (In Latvian).
12. Freer-Smith, P., Muys, B., Bozzano, M., DRossler, L., Farrelly, N., Jactel, H., Korhonen, J., Minotta, G., Nijnik, M. and Orazio, Ch. (2019). *Plantation Forests in Europe: Challenges and Opportunities*. *Form Science to Policy* 9. European Forest Institute, Retrieved: <https://doi.org/10.36333/fs09>. Access: 30.04.2020.
13. de Groot, R., Wilson, M. and Boumans, M. (2002). *A Typology for the Classification Description and Valuation of Ecosystem Functions, Goods and Services*. February 2002, *Ecological Economics* 41(3): pp. 393-408.
14. Jansons, A. (Project Manager) (2017). *Assessment of Greenhouse Gas Emission and CO2 Sequestration in Old Forest Stands*. LVMI Silavap. 46 (In Latvian).
15. Janceva S., Lauberte L., Dizhbite T., Krasilnikova J., Telysheva G., Dzenis M. *Protective Effects of Proanthocyanidins Extracts from Bark of Deciduous Trees in Lipid Systems*. *Holzforschung*, Vol. 71, Issue 7-8, 2017.
16. Janceva, S., Lauberte, L., Arshanitsa, A., Akishin, J., Dizbite, T., Telysheva, G. (2018). *Optimization of Proanthocyanidins Extraction from Bark of Local Hardwood* *Key Engineering Materials*, 2018, Vol.762, pp.163-168.

17. Kenan, R.J., Reams, G.A., Achard, F., Freitas, J.V., Grainger, A. and Lindquist, E. (2015). *Dynamics of Global Forest Area: Results from the FAO Global Forest Resources Assessment 2015*. Forest Ecology and Management, Volume 352, pp. 9 -20.
18. *Latvian Forest Sector in Facts&Figures 2020*. Retrieved: [https://www.zm.gov.lv/public/ck/files/ZM/mezhi/skaitlifakti\\_ENG20.pdf](https://www.zm.gov.lv/public/ck/files/ZM/mezhi/skaitlifakti_ENG20.pdf); Access: 30.04.2020.
19. Lauberte, L., Telysheva, G., Lauberts, M., Ikkere, L. E., Dizhbite, T., Viksna, A. (2017). *Characterisation of Polyphenols in Different Varieties of Salix Bark*. Latvijas Universitātes 75.starptautiskā conference. Ķīmijas sekcija. Pp. 46.lpp.
20. Lauberts, M., Lauberte, L., Arshanitsa, A., Dizhbite, T., Dobeļe, G., Bikovens, O., Telysheva, G. (2018). *Structural transformations of wood and cereal biomass components induced by microwave assisted torrefaction with emphasis on extractable value chemicals obtaining*. Journal of Analytical and Applied Pyrolysis 134, 2018, pp. 1-11.
21. Lauberts, M., Telysheva, G., Venskutonis, P.R., Lauberte, L., Dizhbite, T., Kazernavičiūte, R., Pukalskas, A. (2017). *Diarylheptanoid-rich extract of grey and black alder barks: an effective dietary antioxidant in mayonnaise*. Chemical Papers, 2017, 71, 1007 – 1012. doi:10.1007/s11696-016-0017-3.
22. Lazdina, D. and Daugaviete, M. (2010). *Short Rotation Woody Energy Crops in Latvia*. Fifth International Scientific Conference "Students on their way to science", Collection of abstracts, Jelgava, 2010:30-40.
23. Lazdins, A. (2011). *Preconditions for Efficient Management of Naturally Afforested Farmlands*. Summary of the Doctoral Thesis for the Scientific Degree Dr. in Forest Ecology and Silviculture. Jelgava: p. 50.
24. Lazdins, A. (proj. vad.) (2012). *Development of a Reference Model for Calculating the Reference Level of Carbon dioxide (CO2) Sequestration and Greenhouse Gas (GHG) Emissions Caused by Latvian Forest Management*. Rewiev, LSFRI Silava, p. 42 (In Latvian).
25. Liepins, J. (2020). *Forest Stand Biomass and Carbon Stock Estimates in Latvia*. Latvijas Vegetācija 30: 1–114. (In Latvian).
26. Lipins L. and Liepa I. *Measurement of Round Wood*. LAU Forest Faculty. Monograph. Jelgava, 2007. P. 104 (In Latvian).
27. *Millenium Ecosystem Assessment*. Retrieved: <https://www.millenniumassessment.org/en/index.html> ; Access: 30.04.2020.
28. Paquette, A. and Messier, C. (2010). *The Role of Plantations in Managing the World's Forests in the Anthropocene*. Front Ecol Environ 2010; 8(1): pp.27-34.
29. Pawson, S.M., Brin, A., Brockerhoff, E. G., Lamb, D., Payn, T.W., Paquette, A. and Parrotta, J.A. (2013). *Plantation Forests, Climate Change and Biodiversity*. Biodivers Conserv (2013) 22:1203–1227.
30. Payn, F., Carnus, J.M., Freer-Smith, P, Kimberley, M., Kollert, W., Liu, Sh., Orazio, Sh., Rodriguez, L., Silva, L.N., and Wingfield, M.J. (2015). *Changes in Planted Forests and Future Global Implications*. Forest Ecology and Management, Volume 352, pp. 57-67
31. Penna, I. (2010). *Understanding the FAO's 'Wood Supply from Planted Forests' Projections*. University of Ballarat Centre for Environmental Management. Monograph Series No. 2010/0, p. 91(Retrieved: <http://www.fao.org/forestry/42642-0aad8396ff459da7a9accf941e567ebb5.pdf>).Access: 30.04.2020.
32. Polis, O. and Spalvis, K. (2013). *Using Value of Tree Foliage in Latvia*. (Conference Paper). 13th International Multidisciplinary Scientific Geoconference and EXPO, SGEM 2013; Albena; Bulgaria; 16 June 2013 through 22 June 2013; Code 102053. International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM, pp 805-811.
33. Ponomarenko, J., Trouillas, P., Martin, N., Dizhbite, T., Krasilnikova, J., Telysheva, G. (2014). *Elucidation of Antioxidant Properties of Wood Bark Derived Saturated Diarylheptanoids: A comprehensive (DFT-supported) Understanding*. Phytochemistry, -2014, v.103, pp. 178-187.
34. Savill, P., Kerr, G. and Kotar, M. (2009). Future Prospects for the Production of Timber from Valuable Broadleaves. In book: Spiecker, H., Hedin, S., Makkonen-Spiecker, K. and Thies, M. (2009). Valuable Broadleaved Forests in Europe. EFI., Leiden.Boston:pp. 13-26.
35. Telysheva, G., Dizhbite, T., Lauberte, L., Arshanica A., Lauberts, M., Janceva, S., Ponomarenko, J., Krasilnikova, J., Jashina, L., Andersone, A., Bikovens, O., Vevere, L.Akishins, J. (2018). *Potentialities of Biorefinery for Latvian Deciduous Tree Research of Forest and Earth Resources, Sustainable Use - New Products and Technologies (ResProd):National Research Programm, 2014 – 2018 : Proceedings / Latvian State Institute of Wood Chemistry . Rīga, 2018, 137-141. (In Latvian).*
36. Thomas, S.C., and Martin, A.R. (2012). *Carbon Content of Tree Tissues: A Synthesis*. Forests 3(2): 332–352. Retrieved: <http://doi.org/10.3390/f3020332>. Access: 30.04.2020.

## IMPACT OF LATVIAN WOOD CONSTRUCTION CLUSTER ON THE ECONOMIC EFFICIENCY OF ITS MEMBERS

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**Abstract.** The operation in the cluster allows merchants **increase their operational efficiency**, productivity, exportability and gain other benefits. The establishment of Latvian Wood Construction Cluster at the beginning of 2012 was targeted at promotion of the cooperation within the industry by developing the potential of production and export markets. **The research aim** is to study the changes in the economic efficiency of the merchants belonging to Latvian Wood Construction Cluster. Six Cluster members, whose economic efficiency was measured consistent with the methodology developed by the research authors, were selected for the validation or rejection of the research hypothesis and achievement of the research aim, which was advanced following the recommendation of the experts. The research results lead to the conclusion that the economic efficiency of the merchants under the study has not improved during the Cluster performance period; it has even worsened, especially for "Nordic Homes", "HUSVIK", "Dores fabrika" and "Cross Timber Systems", compared with the average industry figure. Nevertheless, the net sales, operating profit and net profit of "BYKO-LAT" have increased during the Cluster performance period and the achieved results have significantly surpassed the average industry figures, the merchant's economic efficiency did not present an improvement during the Cluster performance period due to the decline in return on assets, increase in production costs, decline in the profit to long-term capital ratio in 2017 and 2018 as well as the decrease in return on equity and commercial profitability in 2018. The authors explain the obtained research results by the fact that the Cluster activities are performed with the aim to inform on the Cluster operation, its members and wood construction; the Cluster activities are less targeted at the increase of economic efficiency.

**Key words:** cluster, economic activities, efficiency.

**JEL code:** M21

### Introduction

In Latvia, the cluster initiative is a relatively new activity, though a successful economic development in many countries of the world is based on clusters; thus, achieving a prosperous cooperation among competing merchants in the same industry, scientific research institutions and government institutions. The operation in the cluster allows merchants to increase their operational efficiency, exportability and gain other benefits. Also several Latvian researchers (e.g. Garanti (2015), Kassalis (2014) etc.) indicate that the operation of merchants in the cluster contributes to the increase of its efficiency, productivity, competitiveness, growth, introduction of innovation, establishment of new companies and viability. Latvian Wood Construction Cluster was established at the beginning of 2012 with the aim to promote the cooperation of merchants within the industry by developing the potential of production and export markets. Consequently, the Cluster has been already operating for eight years and it is possible to make the first detailed measurements of the Cluster performance. **The research hypothesis** – membership of a merchant in Latvian Wood Construction Cluster raises the efficiency of its economic activity. **The research aim** – to study the changes in the economic efficiency of the merchants belonging to Latvian Wood Construction Cluster. **The research tasks:** 1) to characterise the research objects; 2) to develop a methodology for the assessment of the changes in the economic efficiency; 3) to evaluate the impact on the economic efficiency of the merchants belonging to the Cluster with help of the developed methodology.

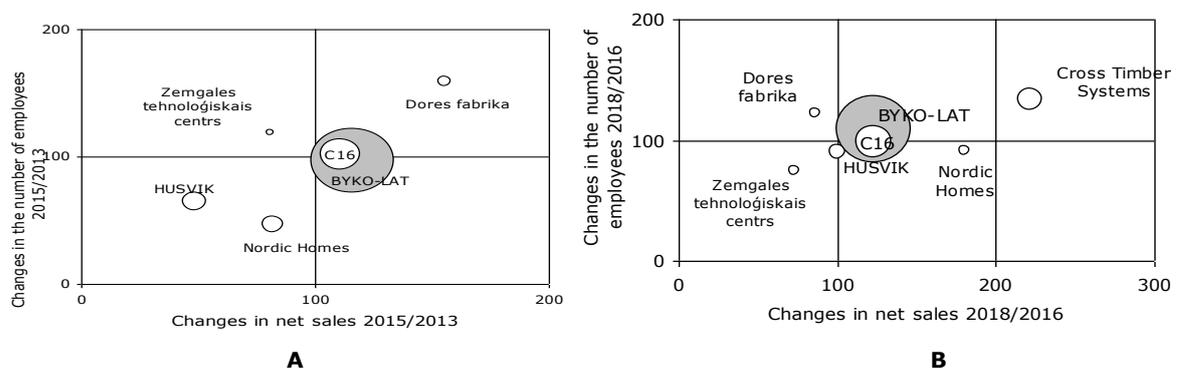
As Latvian Wood Construction Cluster has been operating since 2012, the research covers the period from 2013 to 2018. I. Ffowcs-Williams (2010), a cluster researcher, believes that it is

expedient to initiate the first measurements of the cluster performance three years after the beginning of the cluster operation; thus, the research period was divided into two stages: pre-performance period (2013-2015) and cluster performance period (2016-2018). The present research is based on the data of the Central Statistical Bureau and Lursoft database, publications of the Ministry of Economics and findings of Latvian and foreign researchers. The research employs **general scientific research methods** (monographic, graphic and logically-constructive methods as well as the method of analysis and synthesis), **sociological research methods** (analysis of documents, expert survey) and **economically statistical method** (time series). **The research novelty** – a performance study of the impact of Latvian Wood Construction Cluster was done consistent with the methodology developed by the authors of the present research.

## Research results and discussion

### 1. Characteristics of the research object

Latvian Wood Construction Cluster was established by uniting more than 20 manufacturers of wooden houses and education and research institutions to promote the cooperation within the industry by developing the potential of production and export markets. The essence and aim of the Cluster prescribe that the economic activities of its members should improve as a result of their membership. At the beginning of 2020, the Cluster united 23 manufacturers, 3 education institutions and 2 research institutions. Six out of twenty-three Cluster members were selected for the present research based on the recommendation of the expert (managing director of Latvian Wood Construction Cluster): SIA "Dores fabrika" (produces *square log houses*), SIA "Cross Timber Systems" (produces *CLT houses*), SIA "HUSVIK" (produces *frame houses*), SIA "Nordic Homes" (produces *modular houses*), SIA "Zemgales tehnoloģiskais centrs" (produces *frame houses*) and SIA "BYKO-LAT" (produces *frame houses and modular houses*) (Latvian Wood Construction Cluster, [s.a.]).



**Note:** size of the circle reflects the share of a merchant's net sales in total net sales of merchants under the study  
**Source:** authors' calculations based on the data of the Central Statistical Bureau (s.a.) and Lursoft Ltd (s.a.)

Fig. 1. The changes in net sales and the number of employees of the merchants under the study during the Cluster pre-performance period (A) and the Cluster performance period (B), %

Based on the study results of three cluster performance evaluation methods: Varmland method Scottish method, Cluster Navigats method (Kassalis, 2014), two indicators – **net sales and the number of employees** – which are recommended as the indicators to be evaluated by all the three methods, were chosen for the characterisation of merchants under the study. In addition, these were the indicators the research authors had data available on. For the purpose of analysis, the two indicators were compared with the data of Sector C16 – Manufacture of wood and of products of

wood and cork, except furniture; manufacture of articles of straw and plaiting materials (hereinafter – Sector C16).

Data of Figure 1.A. show that within the period 2013-2015 or the Cluster pre-performance period the net sales growth (+11 %) in Sector C16 was faster than the changes in the number of employees (+1 %), which means that the net sales changes in the Sector were based on the productivity growth rather than on the increase in the number of employees.

During the Cluster pre-performance period, total net sales of Sector C16 increased, while its growth rate was gradually decreasing, which may be explained by the changes in output volume and prices. In 2013 and 2014, the growth of Sector C16 was driven by the increase in output volume and prices, which also led to an increase in net sales (Ekonomikas ministrija, 2013, 2014). In 2015, the global price fall left an impact on the decrease of sales growth rate. Another factor was the increase in the volume of exported production in 2015 with the corresponding decrease in the domestic market (Ekonomikas ministrija, 2015). The construction sector is one of the main consumers of Sector C16 production in the domestic market. The Central Statistical Bureau data (s.a.) show that the changes in construction output were negative, i.e. - 1.2 % in 2015 compared with the previous year.

Changes in the number of employees of Sector C16 are similar to those in net sales: the chain increase rate gradually declines and it was negative in 2015. According to an industry expert (executive director of Latvian Forest Industry Federation), the decline in the number of employees is related with the modernisation of production process leading to the replacement of labour force with equipment.

Among the merchants under the study only "BYKO-LAT" had based the changes in net sales on the increase of productivity, where the net sales grew by 16 %, i.e. faster than in the entire Sector C16, while the number of employees dropped by 3 %. The increase in net sales of "Dores fabrika" (by 55 %) relates with the growth in the number of employees (by 59 %). Other merchants under the study have experienced a decrease in net sales; especially a rapid decline was experienced by "HUSVIK" (by 52 %). The increase in the number of employees of "Zemgales tehnologiskais centrs" (by 19 %) did not ensure an increase of net sales, it even decreased by 19 %. Analysing changes in the balance sheets of the merchants under the study the authors came to the conclusion that only "BYKO-LAT" had invested in fixed assets, which allowed to reduce the number of employees. Other merchants under the study have not invested in modernisation; yet, they have experienced an increase in the number of employees. Figure 1.A does not include "Cross Timber Systems", since the production and sales of *CLT houses* was launched only in 2015.

During the Cluster performance period (2016-2018) the net sales of Sector C16 have increased by 23%, while the number of employees has decreased by 2 %. This means that the changes in net sales of the Sector were basically driven by the productivity growth. Total net sales of Sector C16 in the Cluster performance period gradually rose with a more intense chain increase rate. In contrast, the number of employees in the Sector gradually declined in 2016 and 2017. In 2016, the declines related with the modernisation of production processes, while in 2017, the decrease in the number of employees was affected by bad weather conditions leading to a shortage of raw materials in the entire country by the end of 2017, which forced almost all log processing plants to reduce the length or number of shifts (Kirsons, 2018). In 2018, the number of employees in Sector C16 has slightly increased (by 0.3 %). The sales growth in Sector C16 was driven by the global price increase across Europe (Ekonomikas ministrija, 2018, 2019).

During the Cluster performance period the changes in net sales among the merchants under the study were based on the productivity growth for four merchants: "Cross Timber Systems" (net sales grew by 122 %, while the number of employees increased by 33 %), "BYKO-LAT" (by 23 % and 9 %, respectively), "Nordic Homes" (the respective changes were +80% and -9%) and "HUSVIK" (the respective changes were +1 % and -10 %). Net sales of two other merchants ("Dores fabrika" and "Zemgales tehnologiskais centrs") decreased more rapid than the number of employees.

It may be observed from the data of Figure 1 that "BYKO-LAT" is the largest by net sales among the analysed merchants both in the Cluster pre-performance period and performance period: the share of its net sales constitutes 80 % of total net sales of the merchants under the study. "BYKO-LAT" is also among the ten largest forest industry merchants in Latvia in terms of net sales. "BYKO-LAT" is also the largest employer among the merchants under the study.

## **2. Research methodology for assessing the efficiency of economic activity**

Seven indicators are used to characterise the efficiency of economic activity: net profit, operating profit, commercial profitability, return on assets, return on equity, net profit to equity ratio and net profit to non-current liabilities or long-term capital as well as total production costs to net sales ratio (Rurane, 2001). The calculated indicators were compared with the indicators of previous periods and the average level of the sector (Sector C16). The statistical database of the Central Statistical Bureau provides all the data of Sector C16 selected for the analysis except two indicators: operating profit and total production costs to net sales ratio. These indicators were compared with the arithmetic mean of the merchants under the study.

The calculated figures were expressed in a scale from minus 3 to plus 3 to unite all seven indicators characterising the efficiency of economic activity into a single system and to determine the changes among the merchants under the study during the analysed periods. Zero points mean that the indicator achieved by a merchant under the study equals to the industry level in the respective survey year. One point means that the difference between the indicator achieved by a merchant under the study and the industry level by module does not exceed the value of the industry indicator in the respective year. Two points mean that the difference between the indicator achieved by a merchant under the study and the industry level by module exceeds the value of the industry indicator in the respective year; though the excess is less than two times. Three points mean that the difference between the indicator achieved by a merchant under the study and the industry level by module exceeds the value of the industry indicator in the respective year two or more times. If the difference is negative, the score awarded is preceded by a minus sign, if the difference is positive, then – a plus sign.

The scores obtained were summed up separately for the pre-performance period and the Cluster performance period and total scores for both periods were compared thereafter. If the total score of indicators for the Cluster performance period increased compared with the pre-performance period, the authors assume that the membership of a merchant in the Cluster has improved its economic efficiency, if the score decreases, then – the membership of a merchant in the Cluster has not left an impact on its economic efficiency.

## **3. Characterisation and evaluation of the economic activity efficiency of merchants belonging to the Cluster**

The authors begin their analysis with the net profit. Throughout the study, Sector C16 has been operating with net profit both as a whole and per one merchant of the Sector on average. Net profit

has gradually increased within the analysed period, except for 2015, when it decreased both as a whole and on average in the Sector compared with 2014. According to the forest industry experts, the decline related with the stagnation or even decline of prices in the global market; though, operating costs have grown that year in Latvia leading to a decrease in net profit (Kirsons, 2017). Net profit of Sector C16 has steadily risen during the Cluster performance period, especially within the previous two years (by 67 % in 2017 and 41 % in 2018).

Analysing the merchants under the study, the authors conclude that only two ("BYKO-LAT" and "Zemgales tehnologiskais centrs") of six merchants have generated net profit both in the pre-performance and the Cluster performance period. Net profit of "BYKO-LAT" has increased in the pre-performance period, while it has decreased in 2016 and then again increased in the following two years. Data of Table 1 allow concluding that the net profit of "BYKO-LAT" has several times exceeded the average net profit of Sector C16 throughout the study period. Nevertheless "Zemgales tehnologiskais centrs" has operated with a profit during the study period, the amount of profit has been below the average net profit level of Sector C16, except for 2016, when its net profit exceeded the average level by 23 %.

The other merchants under the study have been operating with loss with the exception of "HUSVIK" (in 2013), "Nordic Homes" (in 2014) and "Cross Timber Systems" (in 2018), when these merchants closed their business years with profit. In general, it should be concluded that the variations in losses of the merchants under the study are wave-like with an increasing trend both in the pre-performance and the Cluster performance period.

The research authors have also analysed the net profit to loss balance ratio (sum of total net profit and total net losses of the merchants under the study), which proved to be negative both in 2013 (EUR 503 thou.) and 2016 (EUR 56 thou.). This means that total losses of the merchants under the study have exceeded total profit; though, the share of losses has essentially declined during Year 1 of the Cluster performance period. The balance is positive in the other years; however, the excess of total net profit over losses is higher in the Cluster pre-performance period compared with the Cluster performance period. The feature may be explained by a significant impact of the "BYKO-LAT" ratio (the share of "BYKO-LAT" net profit in total profit of the merchants under the study is over 90 %) on total profit figures of the merchants under the study. Since the net profit of "BYKO-LAT" was smaller in the Cluster performance period compared with the pre-performance period, it has also left an impact on the total value of the ratio net profit to loss balance.

The comparison of the net profit to loss and operating profit to loss ratios for the merchants under the study showed similar tendencies. Analysing the operating profit to loss balance ratio, the authors concluded that it was negative only in 2013 (almost EUR 600 thou.), while it was positive in the rest of the years despite the fact that basically two merchants ("BYKO-LAT" un "Zemgales tehnologiskais centrs") closed their economic activities with operating profit. The analysis of total operating losses among the merchants under the study operating with loss allows concluding that losses have increased in 2015 and 2016 with the increase of business costs in Latvia and stagnation or even decrease of prices in the global market. Total operating profit dropped also for those merchants under the study who operated with profit in 2016 due to the same reason. In 2017 and 2018, operating losses shrank both totally and individually for merchants operating with loss, excluding "Nordic Homes", whose operating losses grew significantly. The operating profit of "BYKO-LAT" increased, while it gradually lessened for "Zemgales tehnologiskais centrs" during the Cluster performance period.

Commercial profitability is a relative metrics characterising return on sales and assessing the income (profit or loss) to net sales unit.

During the Cluster pre-performance period, the trend of commercial profitability in Sector C16 is wavy-like: in 2013 and 2015, the commercial profitability lowered due to the decrease of net profit in the Sector, while net sales continued to increase, though at a slower pace. In 2014 and the Cluster performance period, a faster chain increase rate of net profit compared with the increase rate of net sales in Sector C16 ensured the increase of commercial profitability. During the Cluster performance period commercial profitability in Sector C16 (5.2 %, 8.3 % and 10.0 %, respectively) surpasses the level of 2014.

Since only two merchants during the entire study period closed their economic activities with net profit, exactly these merchants have positive commercial profitability, while the data of Table 1 evidence that the level of their commercial profitability has been lower than the average ratio of Sector C16. The exception is 2015, when the commercial profitability of "BYKO-LAT" was more than twice the average ratio of Sector C16. The general conclusion is that the membership has not helped improve commercial profitability of merchants belonging to the Cluster with the exception of "Cross Timber Systems" whose commercial profitability has risen from -23.8 % to +2.5 % during the Cluster performance period; though, the figures are worse than the average sector ratios. "HUSVIK" is the other merchant whose negative commercial profitability has declined from -6.5 % in 2016 to -2 % in 2018.

The next two relative indicators analysed are return on equity, which is the ratio of net profit to the annual average value of equity and the ratio of net profit to the annual average value of equity and the annual average value of long-term liabilities. The obtained data showed that the two analysed profitability trends throughout the study period are similar with the commercial profitability figures both for the Sector C16 as a whole and the analysed merchants with the exception of "BYKO-LAT", which had achieved a slightly higher level of return on equity not only in 2015 but also in 2014 and 2016 as well as in 2016 – the level of equity to long-term capital was higher than the average level of Sector C16.

The same trend was also identified for the return on assets, which characterises the ratio of operating profit to the annual average value of assets.

The last analysed indicator was the ratio of total production costs to net sales or the share of production costs in net sales. The share of production costs in net sales has not exceeded 100 % throughout the study period, which means that operating revenues ensured the recovery of production costs for three merchants under the study: "Zemgales tehnologiskais centrs", "BYKO-LAT" and "Dores fabrika". The calculated figures for these merchants had a declining trend during the pre-performance period, while it had an increasing trend during the Cluster performance period. In 2015, the production costs of "Cross Timber Systems" surpassed net sales, while the share of production costs in net sales was below 100 % during the Cluster performance period with a gradual declining trend. In 2017 and 2018, "HUSVIK" that could not cover production costs by net sales in 2015 and 2016 managed to significantly reduce the share of production costs below 90 %. The worst figures in the Cluster performance period among the merchants under the study were presented by "Nordic Homes", which was able to cover production costs by net sales only in 2017. In general, "Zemgales tehnologiskais centrs" has presented the lowest share of production costs in net sales throughout the analysed period.

The calculated indicators describing the economic efficiency were expressed in a scale of -3 to +3 consistent with the developed methodology (Table 1).

Table 1

**Total assessment of economic efficiency indicators, points**

Merchants under the study	Pre-performance period				Cluster performance period				Impact assessment
	2013	2014	2015	Total	2016	2017	2018	Total	
<b>Net profit/loss</b>									
Dores fabrika	-2	-3	-3	-8	-3	-3	-3	-9	↓
Cross Timber Systems	-2	-3	-3	-8	-3	-3	+1	-5	↑
HUSVIK	+3	-3	-3	-3	-3	-3	-2	-8	↓
Nordic Homes	-3	+3	-3	-3	-3	-3	-3	-9	↓
Zemgales tehnologiskais centrs	-1	-1	-1	-3	+1	-1	-1	-1	↑
BYKO-LAT	+3	+3	+3	+9	+3	+3	+3	+9	→
<b>Operating profit/loss</b>									
Dores fabrika	+2	-2	-2	-2	-2	-2	-2	-6	↓
Cross Timber Systems	+1	-2	-3	-4	-3	-3	-1	-7	↓
HUSVIK	+3	-3	-2	-2	-2	-3	-2	-7	↓
Nordic Homes	-3	+1	-3	-5	-3	-3	-3	-9	↓
Zemgales tehnologiskais centrs	+2	-1	-1	0	-1	-1	-1	-3	↓
BYKO-LAT	+3	+3	+3	+9	+3	+3	+3	+9	→
<b>Commercial profitability</b>									
Dores fabrika	-2	-2	-3	-7	-3	-3	-3	-9	↓
Cross Timber Systems	0	0	-3	-3	-3	-3	-1	-7	↓
HUSVIK	+1	-3	-3	-5	-3	-3	-2	-8	↓
Nordic Homes	-3	-1	-3	-7	-3	-3	-3	-9	↓
Zemgales tehnologiskais centrs	-1	-1	-1	-3	-1	-1	-1	-3	→
BYKO-LAT	-1	-1	+2	0	-1	-1	-1	-3	↓
<b>Return on equity</b>									
Dores fabrika	-2	-2	-3	-7	-2	-3	-3	-8	↓
Cross Timber Systems	+3	-3	-3	-3	-3	-3	+1	-5	↓
HUSVIK	+3	-3	-3	-3	-3	+3	+3	+3	↑
Nordic Homes	+3	-3	-3	-3	+3	+3	-3	+3	↑
Zemgales tehnologiskais centrs	-1	-1	-1	-3	-1	-1	-1	-3	→
BYKO-LAT	-1	+1	+2	+2	+1	-1	-1	-1	↓
<b>Profit to long-term capital</b>									
Dores fabrika	-3	-2	-2	-7	-3	-2	-3	-8	↓
Cross Timber Systems	+1	-2	-2	-3	-3	-3	-3	-9	↓
HUSVIK	-1	+2	-3	-2	-3	-3	-3	-9	↓
Nordic Homes	+3	-3	+1	+1	-3	-3	-3	-9	↓
Zemgales tehnologiskais centrs	-1	-1	-1	-3	-1	-1	-1	-3	→
BYKO-LAT	-1	-1	+1	-1	3	-1	-1	+1	↑
<b>Return on assets</b>									
Dores fabrika	-1	-2	-3	-6	-2	-3	-2	-7	↓
Cross Timber Systems	-3	-2	-3	-8	-2	-2	-1	-5	↑
HUSVIK	+2	-3	-3	-4	-2	-3	-2	-7	↓
Nordic Homes	-3	+2	-3	-4	-3	-3	-3	-9	↓
Zemgales tehnologiskais centrs	-1	-1	-1	-3	+1	-1	-1	-1	↑
BYKO-LAT	-1	+1	+3	+3	+2	+1	-1	+2	↓

Merchants under the study	Pre-performance period				Cluster performance period				Impact assessment
	2013	2014	2015	Total	2016	2017	2018	Total	
	<b>Share of production costs in net sales</b>								
<b>Dores fabrika</b>	+1	+1	+1	+3	+1	-1	-1	<b>-1</b>	↓
<b>Cross Timber Systems</b>	0	0	-1	-1	+1	-1	-1	<b>-1</b>	→
<b>HUSVIK</b>	+1	-1	-1	-1	-1	0	+1	<b>0</b>	↑
<b>Nordic Homes</b>	-1	+1	+1	+1	-1	-1	-1	<b>-3</b>	↓
<b>Zemgales tehnologiskais centrs</b>	+1	+1	+1	+3	+1	+1	+1	<b>+3</b>	→
<b>BYKO-LAT</b>	-1	-1	+1	-1	+1	0	0	<b>+1</b>	↑

Source: authors' calculations based on the developed methodology

The research results indicate that the economic efficiency of merchants has not improved during the Cluster performance period, it has even worsened compared with the average indicators of Sector C16, especially that of "Nordic Homes" (decrease of economic efficiency by 25 points: from -20 points in the pre-performance period to -45 points in the Cluster performance period), "HUSVIK" (decrease by 16 points: from -20 to -36 points) and "Dores fabrika" (by 14 points: from -34 to -48 points). The economic efficiency of "Cross Timber Systems" has also worsened (from -30 points to -39 points). Nevertheless net sales, operating profit and net profit of "BYKO-LAT" have increased during the Cluster performance period and the achieved indicators have been significantly above the average figures of the Sector, the operating efficiency of the merchant has not improved throughout the Cluster performance period due to the decline of return on assets, increase of production costs, decrease of the profit to long-term capital ratio in 2017 and 2018 as well as the decrease of return on equity and commercial profitability in 2018.

No significant changes were observed in the economic efficiency of "Zemgales tehnologiskais centrs"; though, the analysed indicators have essentially worsened in 2018. Throughout the whole analysed period the indicators achieved by the merchant have been below the average level of Sector C16.

The authors explain the obtained results by the fact that the activities implemented by the Cluster are aimed at information on the Cluster operation, its members and wood construction. The Cluster activities are less aimed at the increase of operating efficiency and competitiveness. During the period 2017-2020, the Cluster is implementing the project "Promotion of International Competitiveness of Wood Construction Cluster" (total budget – EUR 488 220) co-financed by the European Regional Development Fund with the aim to enhance the development of merchants belonging to the wood construction sector in domestic and foreign markets. The main activities of the project relate with the implementation of information campaigns, organisation of workshops, research publications and transformation of the Cluster website into a sales platform. Among the four planned results, one is related with the increase of export volumes of the Cluster members by at least 10% and sales – by at least 6%, which the research authors believe to be modest (Latvian Wood Construction Cluster, [s.a.]).

### Conclusions, proposals, recommendations

- 1) The overall economic efficiency of the merchants under the study has not improved during the Cluster performance period (2016-2018) compared with the Cluster pre-performance period (2013-2015). It has even worsened; thus, rejecting the research hypothesis.

- 2) The economic efficiency has significantly decreased for "Nordic Homes" (by 25 points or 2.25 times), "HUSVIK" (by 16 points or 1.8 times), "Dores fabrika" (by 14 points or 1.4 times) and "Cross Timber Systems" (by 9 points or 1.3 times).
- 3) Nevertheless net sales, operating profit and net profit of "BYKO-LAT" have increased during the Cluster performance period and the achieved indicators have been significantly above the average figures of the Sector, the economic efficiency of the merchant has not improved throughout the Cluster performance period due to the decline of return on assets, increase of production costs, decrease of the profit to long-term capital ratio in 2017 and 2018 as well as the decrease of return on equity and commercial profitability in 2018.
- 4) The economic efficiency of "Zemgales tehnologiskais centrs" has not changed significantly, while the analysed indicators have essentially worsened in 2018. Throughout the whole analysed period the indicators achieved by the merchant have been below the average level of Sector C16.
- 5) The methodology for the evaluation of the Cluster performance developed by the research authors shall be approbated also on the basis of merchants belonging to other clusters.

## Bibliography

1. Central Statistical Bureau of Latvia (CSB) ([s.a.]). *Statistics Database*. Retrieved: <https://www.csb.gov.lv/en/statistics>. Access: 02.01.2020. (Tables SBG010, UFG030, UFG040, UFG050, UFG070, BUG020)
2. Ekonomikas ministrija (Ministry of Economics) (2013). Zinojums par Latvijas tautsaimniecības attīstību (Report on Economic Development of Latvia). Rīga, 37.lpp.
3. Ekonomikas ministrija (Ministry of Economics) (2014). Zinojums par Latvijas tautsaimniecības attīstību (Report on Economic Development of Latvia). Rīga, 39.lpp.
4. Ekonomikas ministrija (Ministry of Economics) (2015). Zinojums par Latvijas tautsaimniecības attīstību (Report on Economic Development of Latvia). Rīga, 39.lpp.
5. Ekonomikas ministrija (Ministry of Economics) (2016). Zinojums par Latvijas tautsaimniecības attīstību (Report on Economic Development of Latvia). Rīga, 43.lpp.
6. Ekonomikas ministrija (Ministry of Economics) (2018). Latvijas ekonomikas attīstības pārskats (Review on the Economic Development of Latvia). Rīga, 37.lpp.
7. Ekonomikas ministrija (Ministry of Economics) (2019). Latvijas ekonomikas attīstības pārskats (Review on the Economic Development of Latvia). Rīga, 37.lpp.
8. Ffowcs-Williams, I. (2010). *Cluster Development Course: Workshop material*. Cluster Navigators, Investment and Development Agency of Latvia. Rīga, Latvia.
9. Garanti, Z. (2015). Regional Cluster Establishment and Development Possibilities in Latvia (Regionālo klasteru izveides un attīstības iespējas Latvija): Promocijas darbs ekonomikas doktora (Dr.oec.) zinātniska grāda iegūšanai. Jelgava: LLU, 174 lpp.
10. Kassalis, I. (2014). Ostu klasteru izvertejums un sniegums Latvijas ekonomiskajā izaugsme (Evaluation and Performance of Port Clusters for the Economic Growth of Latvia): Promocijas darbs doktora zinātniska grāda iegūšanai ekonomikas nozarē. Rīga: Latvijas Universitāte, 189 lpp.
11. Ķirsons, M. (2017). *Globalo notikumu ietekme (Impact of Global Events)*. Top 500 Latvijas lielākie uzņēmumi: Laikraksta Dienas Bizness pielikums. Rīga: Diena-Bonnier, 94.-95.lpp.
12. Ķirsons, M. (2018). *Pielagojoties trim gadalaikiem (Adapting to Three Seasons)*. Top 500 Latvijas lielākie uzņēmumi: Laikraksta Dienas Bizness pielikums. Rīga: Diena-Bonnier, 90.lpp.
13. Latvia Wood Construction Cluster: [Latvijas koka būvniecības klastera mājaslapa] ([s.a.]). Retrieved: <https://woodhouses.lv/en> Access: 02.01.2020.
14. Lursoft Ltd. ([s.a.]). *Database of All Companies Registered in Latvia*. Retrieved: <https://www.lursoft.lv/en/data-bases-of-enterprises>. Access: 02.01.2020. (Dores fabrika Ltd, Cross Timber Systems Ltd, HUSVIK Ltd, Nordic Homes Ltd, Zemgales tehnologiskais centrs Ltd, BYKO-LAT Ltd)
15. Rurane, M. (2001). *Finansu pārvaldība (Financial Management)*. Rīga: Latvijas izglītības fonds, pp.189-245.

## ECONOMIC RESULTS AND DEVELOPMENT OF ORGANIC FARMS IN LATVIA

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**Abstract.** Organic farming is experiencing rather rapid development in Europe, including in Latvia. This could be rated from different aspects. The purpose of this article is to assess the economic indicators of the development of organic farming, linking them to conclusions stated in various studies in Latvia and other countries on the diverse economic, social and environmental impact of this type of farming, as well as potential problems. So, theoretical and empirical approaches are combined in this article. The different problems we can state as outcome of the research. The farms concentrate in areas with less favourable conditions for conventional farming. Also, large continuous areas under organic farming often leads to low production value per hectare and do not reach social goals.

**Key words:** organic, farms, agriculture, development, effectiveness.

**JEL codes:** Q15, Q18, Q57.

### Introduction

Organic farming is a different farming paradigm based on the use of local resources and knowledge, contributing to rural development by activating knowledge processes, cooperation, building social capital, creating a rural political environment (Sumane, 2010). It is part of a larger sustainable agriculture that produces healthier food and a better society. Organic farming can be seen as a social movement characterized by networking, solidarity, collective action, shared beliefs.

Organic farming is experiencing rather rapid development in Europe, including in Latvia. This process, however, is not rated unequivocally. In addition, the potential return from the organic farming should be assessed from various aspects - ensuring healthy food, application of environment-friendly agricultural methods, development of rural areas etc. A complex of these aspects is considered important also in Latvia, thinking about future development of organic farming.

The purpose of this article is to assess the economic indicators of the development of organic farming, linking them to conclusions stated in various studies in Latvia and other countries on the diverse economic, social and environmental impact of this type of farming, as well as potential problems. It is important for the formation of future organic farming policy in the European Union (EU) and Latvia.

The following objectives were set to reach this goal:

- analysis of studies performed in Latvia and abroad on the economic, social, environmental and ethical aspects of organic farming;
- analysis of development of organic farming in the context of Latvia and Baltic States;
- assessment of economic indicators of organic farms in Latvia, including in comparison with the conventional farms.

Qualitative and quantitative economic research methods: analysis and synthesis; comparative analysis, logically and abstractly constructive methods were used in the study, performing analysis of various scientific publications. Novelty of the study must be linked to the used economic indicators, including comparative analysis of farms of various size. The study results may be used in improvement of the Common Agricultural Policy in respect of organic farming.

Scientific studies, official statistics, as well as FADN data is used in the paper. Restrictions of the study are mostly related to the volume of the paper, thus, a limited number of indicators was analysed.

## **Research results and discussion**

### **1. Theoretical discussion**

Studies on organic farming in Latvia so far point at several problems in development of this type of farming. Regardless of a significant number of farms and size of managed areas, the organic farming in Latvia in general makes a comparatively small contribution in manufacturing of produce (Melece & Shena, 2019). Development of organic farming in Latvia is affected by several factors indicated in the studies and characteristic to other Eastern European countries. Lack of state policy, requirements for turnover or at least marginal revenue from agriculture, high certification costs, processing and marketing problems, lack of information, bureaucratic problems and restrictions to processing and sale are among them (Melece, 2010). Moreover, small organic farms are excluded from the EU support for cooperatives and manufacturer groups (Melece & Shena, 2019), affecting development processes and rural well-being.

Nowadays, the concept of rural well-being is not only technical, based on economic data, but also social (Rios et al. 2016). Prosperity in rural contexts is increasingly understood as being multi-dimensional and that people seek to balance economic parameters with human, social and environmental well-being (Rivera et al., 2017).

Organic farming is increasingly viewed from a sustainability perspective. There is little research on the effects of the environment and climate and their role on organic farming in relation to conventional farming. Studies show lower CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> emissions, improved soil and water quality, lower energy use per land area, and higher energy efficiency per land area. However, organic farming has lower soil profile SOC stocks, lower crop yields, higher land requirement, lower energy production per land area (Lorenz & Lal, 2016).

Overall, the organic farming outperforms conventional farming in production, environmental and economic sustainability and welfare components (Reganold & Wachter, 2016). A meta-analysis, summarizing 40 years of experience and covering 55 crops across continents concludes that by including a price premium, organic farming is more profitable (22 to 35 % higher net cost / value ratios) (20 to 24 %) if they do not include net present values (-27 to -23 %) - net returns accounting for time value - and benefit / cost ratios (-8 to -7 %) were significantly lower than conventional agriculture. (Crowder & Reganold, 2015). It is recognized that appropriate investment in agro-ecological studies to improve biological management systems could significantly reduce or eliminate crop differences for some crops or regions (Ponisio et al., 2015).

The effectiveness of organic farming is the subject of debate based on different valuation methodologies; for example, Kirchmann criticizes studies that show insignificant differences between organic farming and conventional farming. In Sweden, crop production requires 50% more arable land, as yields are 35% lower (Kirchmann, 2019).

Konstantinidis criticizes the EU's policy of supporting organic farming and wonders if it focuses on national "repeasantization". In the context of the CAP, there are objectives related to supporting small farms in organic farming and their role in employment, promoting local knowledge. In contrast, the EU organic farms are larger than conventional ones and require less labour, they have high mechanization and monoculture production (Konstantinidis, 2018).

The proportion of organic areas is correlated with the average size of the farms; the share of organic farming is not related to the higher utilization of agricultural labour per hectare. The results of the study raise the question of conventionalization of the organic farming and adherence to the ideas and principles of organic farming (Konstantinidis, 2016).

Publications emphasize the need to modernize the organic farming sector, taking into account the principles of the circular economy and applying innovation (Zanoli et al., 2019), making organic farming sustainable, result-based, continuously adaptive, and site-oriented (Niggli et al., 2017; Arbenz et al., 2017).

However, the social aspects of the organic farming are generally little included in the assessments.

The production of organic products also depends largely on consumer values. Creating sustainable consumption values can contribute to increasing demand for organic produce (Schosler et al., 2013). Scientific publications deal with the ethical side of organic production. The individual and the public must be in balance when creating a new eco-habitus (Schrank & Running, 2018).

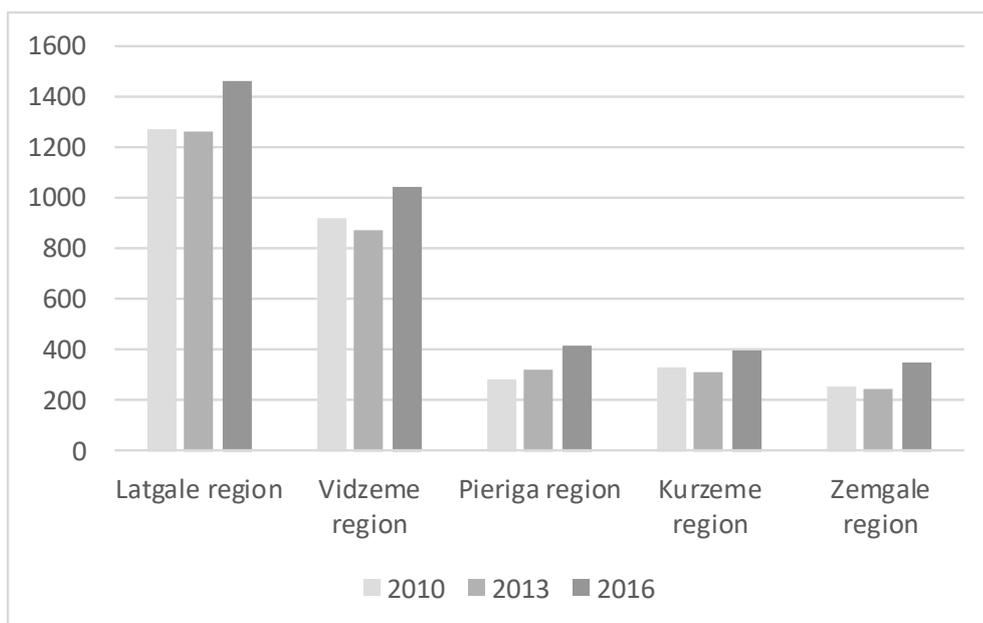
Organic farms plays an important role in the local food systems (LFSs) as demand for spatially recognized produce increases. (Papaoikonomou & Ginieis, 2017). This is where local food communities are formed.

In conclusion, there is no clear view of the role of the organic farming in rural development. Still, the contribution of organic farming goes beyond the traditional values of selected economic indicators.

## 2. Development of organic farms in Latvia and Baltic States

A number of organic farms rapidly increased in Latvia after joining the EU and introduction of Organic farm (OF) support in 2004 - 2006. The largest number of organic farms could be observed in 2008, while a number of these farms significantly reduced within next three years. These changes may be linked to completion of 5-year obligation period assumed based on RDP 2004-2006, after which a portion of farms chose not to continue obligations in the new period. In turn, since 2015, starting the obligations of the new RDP 2014-2020 period, more than 1200 OF were registered within 2 years, which formed 35 % of their total number in 2014.

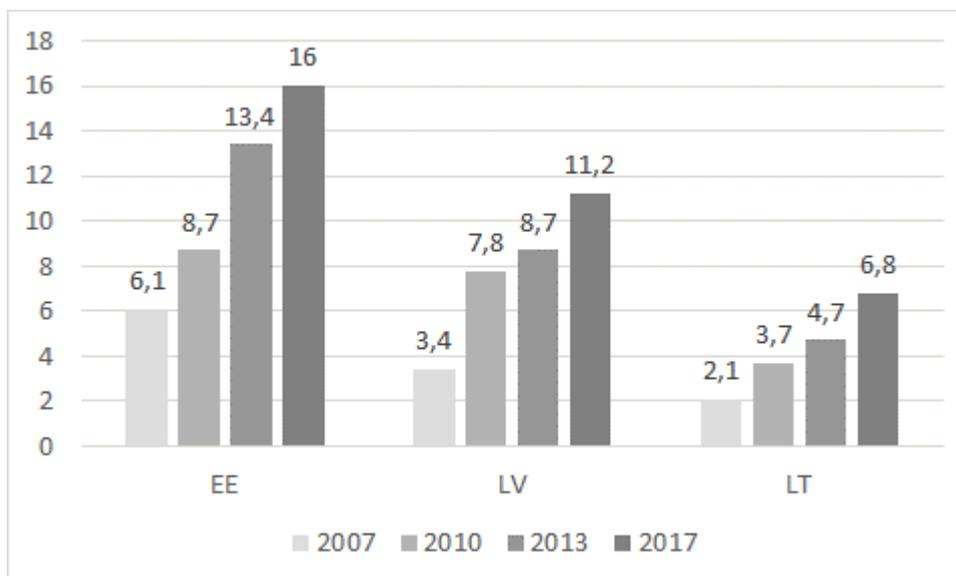
Territorial layout of the OF in the regions of Latvia is not even. A significantly larger number of OF is located in Latgale and Vidzeme regions, while it is significantly smaller in other regions (Figure 1).



Source: Author's calculation based on Latvian Central Statistical Bureau data

Fig. 1 A number and dynamics of organic farms in the regions of Latvia

It should, however, be rated positively that the most rapid increase in a number of such farms during the period between 2010 and 2016 was in the regions of Pierīga (by 43 %) and Zemgale (37 %) regions, where this number before than was the smallest. The largest proportion of OF in the total number of all farms was maintained in the Vidzeme region - 7.5 %, followed by the Latgale region with 6.1 %, and the smallest proportion is still observed in the Zemgale region – 3 % (2016). We can conclude that organic farms concentrate in regions and areas with less favourable soil and climatic conditions.



Source: Eurostat

Fig. 2 Share of organic area in the total UAA in the Baltic States from 2007 to 2017

Assessing the total volume of the areas of organic farming, they are larger in Latvia compared to other Baltic States. Proportion of organic areas in the total UAA during the entire period from 2007 to 2017 was the highest in Estonia, but the lowest in Lithuania (Figure 2.), while the increase trend in all Baltic States is approximately similar.

### 3. Economic indicators of organic farms in Latvia

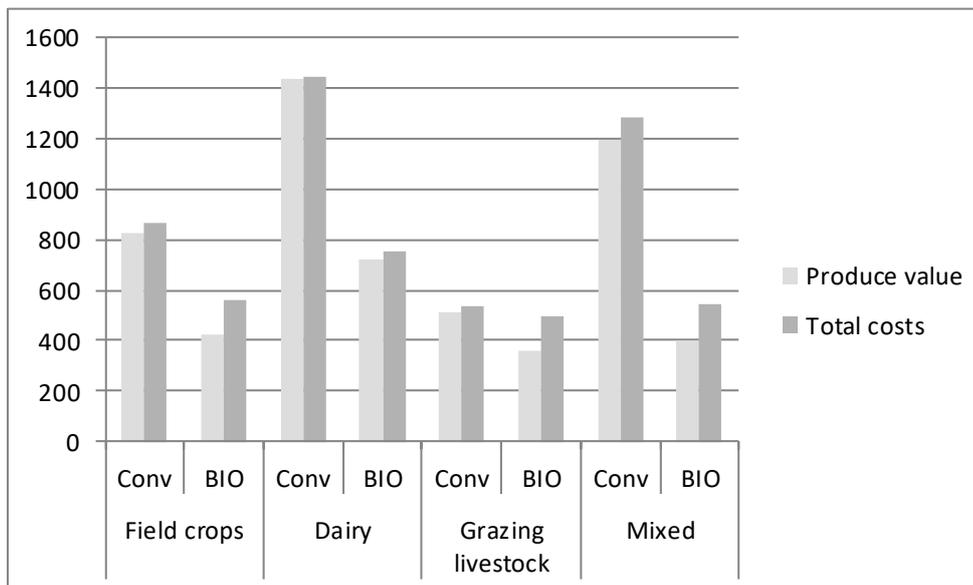
Economics of organic farms is characterized by value of the produce and costs per 1 ha.

We may understand the economic return of manufacturing by comparing value and costs of the produce. Value of the produce is the assessment of all manufactured produce in cash according to accounting data (both sold and self-produced items, but not including any subsidies and state support). Costs of goods and services necessary for the manufacturing process are understood as the costs. The Farm Accountancy Data Network distinguishes three types of costs: 1) intermediary consumption - costs of the goods and services used in the manufacturing process; 2) depreciation of fixed assets; 3) external costs - they include costs of the hired workforce, land rental payments, as well as the costs of the borrowed capital. In this paper, we assess the total amount of all these costs.

Taking into account that the produce value and costs significantly depend on the selected specialization, these indicators are viewed in the main specialization groups, represented in the organic farms (Figure 3).

Data show that the land areas per produce unit in OF are larger than in the conventional farms. In addition, in the farms with grazing livestock, the respective difference is the smallest (30 %), while in the farms of mixed specialization it reaches even 3 times. Yet, the costs per area unit are

also much higher in the conventional farms, except for the farms with grazing livestock, where the difference is only 8 %. It is related to smaller expenses for fertilizer and plant protection, lesser processing of soil, as well as less intensive farming in general.



Source: Authors' calculation from the Farm Accountancy Data Network database

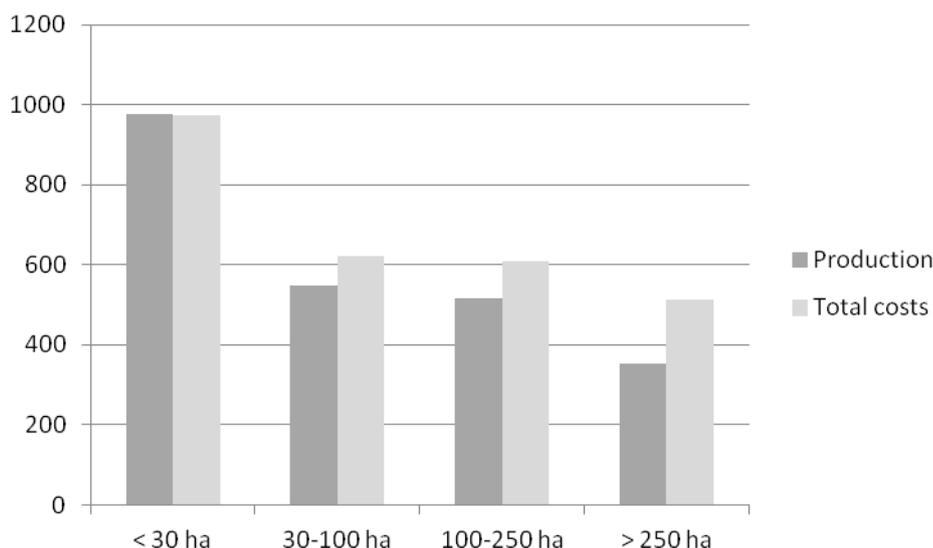
Fig. 3 Value and costs of the produce (EUR/ha) in organic and conventional farms in 2017

Thus, the amount of the total costs in the viewed specializations in the organic farms and conventional farms in average exceeds the value of the produce, yet this excess is varying. The largest negative difference in absolute numbers is formed in the farms with grazing livestock – 115 EUR/ha, which may formally be covered by means of additional compensation. The second largest difference is observed in field crop farms – 93 EUR/ha. The difference in the mixed-specialization farms is smaller - in average of 49 EUR/ha, while it is the smallest in the dairy farming - only 12 EUR/ha. It should be noted that due to comparatively small sample of the Farm Accountancy Data Network, the aforementioned data shall be considered as indicative only and require more detailed assessment. The field representatives explain such differences with the fact that a majority of the dairy farms are operating already for an extended period, thus, their costs have stabilized. Many new farms have started their operation in the field of grazing livestock in the recent years, thus, their costs are comparatively greater compared to obtained produce.

The data on productivity and obtaining produce in general shows that the productivity and value of produce per area unit of the organic crops in the crop production of Latvia is significantly lower than in the conventional farms. It is assumed in the studies performed in Europe that productivity of organic crops is approximately by 20 % lower than in the conventional farms (Paragraphs 4.1). Similar results - 20-25 % are acquired in Latvia by comparing the most popular crops, except for wheat where the difference is much higher. Less intense crop rotation (with a greater proportion of grassland) is applied in organic farms, thus, the average value of produce to be acquired from the land area is significantly lower. Taking into account that the produce value and costs significantly depend on the selected specialization, these indicators are viewed in the main specialization groups, represented in the organic farms.

The produce value and costs depend also on the UAA in management of the farm. As shown by the data summary of the Farm Accountancy Data Network in 2017, the most effective use of land in terms of area is in the smallest farms (up to 30 ha). The value of the produce manufactured therein

from 1 ha was EUR 977, which is almost 3 times more than in the group of the largest farms (with UAA over 250 ha) (Figure 4).



**Source: Authors' calculation from the Farm Accountancy Data Network database**

**Fig. 4 Value and total costs of OF produce (EUR/1 ha UAA) in breakdown by UAA in 2017**

The highest level of costs per 1 ha (975 ha) is observed in the smallest farms in terms of area; yet, they form the only group, for which the value of the produce covers the costs. Majority of these farms are engaged in the dairy farming, as well as they have mixed specialization. Some farms are engaged in the field of pig farming and poultry farming, which significantly increases the average produce value, but even without this specialization, for the group's farms, it is higher than in other groups.

In turn, the largest farms in terms of areas make the least volume of produce per 1 ha UAA, and they have the greatest negative difference between revenue and expenditure. The farms of this group are engaged mostly in breeding of grazing livestock and arable farming. In terms of economics, they belong to the group of medium-large and large farms – standard output is mostly within the range of EUR 50,000 and 200,000.

### **Conclusions, proposals, recommendations**

- 1) Scientific publications do not reach clear conclusions about the economic, social and environmental benefits of organic farming. Opinions and arguments differ based on different research approaches, initial assumptions, methods chosen.
- 2) Nevertheless, the contribution of organic farming goes beyond the traditional values of selected economic indicators. In addition, as an initially marginal niche product, organic farming changes conventional agrotechnical approaches to production, making them more environmentally and human friendly.
- 3) Organic farming in Latvia has become a significant type of farming, and a lower produce value compared to costs is acquired therein, thus additional support is important for this type of farming.
- 4) Organic farms concentrate in regions and areas with less favourable soil and climatic conditions, what reduces their contribution to environmental goals.
- 5) A limiting factor for the development of organic farming so far was a limitation for the new farms to apply for the support measures.

- 6) Upon increase of area for one organic farm, the value of the obtained produce from ha reduces, as well as a negative difference between the produce value and costs increases. Thus, it is rational to recommend the facilitation of formation of a greater number of organic farms, while limiting increase of the areas managed by one farm.

## Bibliography

1. Arbenz, M., Gould, D., Stopes, C., 2017. ORGANIC 3.0—the Vision of the Global Organic Movement and the Need for Scientific Support. *Org. Agr.* 7:199–207
2. Crowder, D. W. & Reganold, J. P. *Financial Competitiveness of Organic Agriculture on a Global Scale*. *Proc. Natl Acad. Sci. USA* 112, 7611–7616 (2015)
3. Kirchmann, H. 2019. Why Organic Farming is not the Way Forward. *Outlook on Agriculture* Vol. 48(1) 22–27
4. Konstantinidis, C., 2016. Assessing the Socio-economic Dimensions of the Rise of Organic Farming in the European Union, *Review of Social Economy*, 74:2, 172-193
5. Konstantinidis, C., 2018. Capitalism in Green Disguise: The Political Economy of Organic Farming in the European Union. *Review of Radical Political Economics*. Vol. 50(4) 830–852 Union for Radical Political Economics
6. Lorenz, K. Lal, R. 2016. Environmental Impact of Organic Agriculture. *Advances in Agronomy*. ISSN 0065-2113.Elsevier Inc.<http://dx.doi.org/10.1016/bs.agron.2016.05.003>
7. Melece, L., 2010. *Environmentally Friendly Agriculture: Development issues in Latvia*. Socialiniai Tyrimai/ Social research. Nr 2(19), 37-46
8. Melece, L., Shena, I., 2019. *Development Issues of Organic Farming in Latvia*, SGEM 2019, Conference proceedings, Vol. 19, Issue: 5.3
9. Niggli, U., Andres, Ch., Willer, H., Baker, B.P., 2017. *Building a Global Platform for Organic Farming Research, Innovation and Technology Transfer*, *Org. Agr.* 7:209–224
10. Papaiokonomou, E., Ginieis, M., 2017 Putting the Farmer's Face on Food: Governance and the Producer–Consumer Relationship in Local Food Systems. *Agric Hum Values* 34:53–67
11. Ponisio LC, M'Gonigle LK, Mace KC, Palomino J, de Valpine P, Kremen C. 2015. Diversification Practices Reduce Organic to Conventional Yield Gap. *Proc. R. Soc. B* 282: 20141396. <http://dx.doi.org/10.1098/rspb.2014.1396>
12. Reganold, J.P., Wachter, J.M., 2016. Organic Agriculture in the Twenty-first Century, *Nature Plants*. Vol 2. [www.nature.com/natureplants](http://www.nature.com/natureplants)
13. Rios, I. et al. 2016. Redefining Rural Prosperity Through Social Learning in the Cooperative Sector: 25 years of Experience from Organic Agriculture in Spain, *Land Use Policy* 54, 85–94
14. Rivera M. et al., 2017. Rethinking the Connections between Agricultural Change and Rural Prosperity: A Discussion of Insights Derived from Case Studies in Seven Countries. *Journal of Rural Studies*.
15. Schosler, H., Boer, J., Boersema, J.J., 2013. The Organic Food Philosophy: A Qualitative Exploration of the Practices, Values, and Beliefs of Dutch Organic Consumers Within a Cultural–Historical Frame. *Agric Environ Ethics* 26:439–460
16. Schrank, Z., Running, K., 2018. Individualist and Collectivist Consumer Motivations in Local Organic Food Markets *Journal of Consumer Culture* Vol. 18(1) 184–201
17. Sumane, S., 2010. Lauku inovācija: jaunu attīstības praksi veidosana. Bioloģiskās lauksaimniecības piemērs. (Rural Innovation: Creation of New Development Practices. Example of Organic Farming). Promotional Paper, LU
18. Zanolli, R., Migliorini, P., Canali, S., Cicia, G., 2019. Special Issue: 'Organic Farming and Agroecology as a Response to Global Challenges'—selected papers from the 2nd International GRAB-IT Workshop (GRAB-IT 2018), Anacapri, Italy, 26–27 June 2018, *Org. Agr.* 9:457–458

## **PRODUCTION AND CO-OPERATION IN AGRICULTURE**

## **INFLUENCE OF INSTITUTIONAL FRAMEWORK ON ECONOMIC ACTIVITY OF AGRICULTURAL COOPERATIVES: LATVIA'S CASE**

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**Abstract.** Given the important role of agricultural cooperatives in strengthening competitiveness and market power of farmers in the food chain, it is essential to understand the competitiveness of their own economic activities. The purpose of this article is to summarise the institutional base affecting agricultural cooperation to assess its impact on the economic activity. To reach the goal, the normative documents that affect the agricultural co-operation directly were gathered and studied, and certain institutional obstacles and problems affecting the cooperation of economic activity were highlighted. At the end, conclusions on the institutional framework for economic activity of agricultural cooperatives in Latvia and suggestions on the legislative changes needed to improve the competitiveness of agricultural cooperatives are offered.

**Key words:** agricultural cooperatives, Latvia, theory of cooperatives, legislation.

**JEL code:** J54, O13, P13, Q13

### **Introduction**

Agricultural cooperative is a successful model of promoting farm competitiveness and strengthening their power in the food chain (Barrett, 2008; Soboh, 2009; FAO, 2014). There is an expectation that small farmer cooperatives will be able to address market failures and thereby achieve fair growth (Tadesse, Abate, & Ergano, 2019). The importance of cooperatives is well shown by the Europe Union (EU) economy—there are 250,000 cooperatives in the EU, owned by 163 million citizens (one third of the EU population) and employing 5.4 million people. As to the market share, cooperatives hold substantial market shares in agriculture industry: 83% in the Netherlands, 79% in Finland, 55% in Italy, and 50% in France (European Commission, 2020).

There are at least three main factors that determine the success and competitiveness of cooperatives in food chains. These factors are described in a European Commission research and they are related to the position in the food supply chain, internal governance, and the institutional environment (Bijman et al., 2012). In this paper the authors focus on institutional framework which refers to the legal, political, social and cultural context in which a cooperative operates, and which may have a supporting or restrictive effect on the cooperatives.

The cooperative legislative framework in the EU Member States is of a wide range. For example, there is a very liberal cooperative legislation in Luxembourg, the Netherlands, Spain, Sweden and the United Kingdom (Bijman, Hanisch, & van der Sangen, 2014). In contrast, cooperatives are strictly regulated in Germany, where a cooperative should undergo an annual audit to verify its compliance (Bennett, 2014; Bijman et al., 2012). The Latvian cooperative legislation framework is very similar to the one in Germany.

The purpose of this article is to summarise the institutional base affecting agricultural cooperation to assess its impact on the economic activity. To reach the goal, the research results and discussion section will give an insight into the environment of Latvian agricultural cooperatives and look at the impact of national policies on agricultural cooperation, as well analyse the national legislation and its impact on the economic activities of cooperatives. Restriction: in this article we look only at the policy and legislation's impact on the economic activity of Latvian agricultural cooperatives.

Conclusions on the influence of institutional framework on the Latvian agricultural cooperatives and suggestions for future activities including changes in legislation and researches to improve the competitiveness of agricultural cooperatives are provided in the concluding part.

This review is based on a literature review of journal articles, book chapters and working papers, policy documents and Latvian national legislation, and secondary data. For the implementation of the research purpose and tasks will be used monographic - forming a theoretical discussion; data grouping, analysis and synthesis methods - for information collection, logical arrangement and systematization.

## **Research results and discussion**

### **1. Environment of Latvian agricultural cooperatives**

Latvia, a member of the European Union since 2004, is a small, dynamic and open economy that has successfully transformed from central planning to a market economy. Reforms have driven certain progress, albeit in agriculture it has been generally slower than in the economy as a whole (OECD, 2019). There remains a large number of small, non-commercial farms which affect the economic performance of the sector as they benefit from industry support and can contribute to black economy. The structure of commercial farms is dual: a livestock farm is generally smaller than an average EU livestock farm, while cereal farms are mostly large and export-oriented. Cereals are Latvia's main agricultural and food export commodity group (DeBoe, 2019).

This all has influence on and gives better understanding of the development of agricultural cooperatives in Latvia.

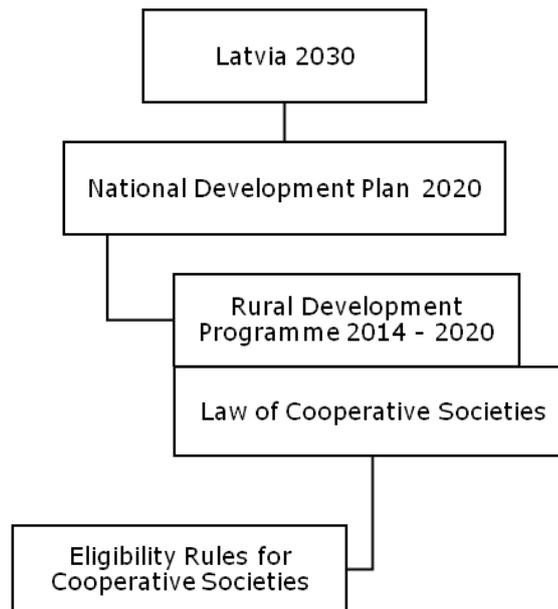
The cooperative system in Latvia has a long history with a very difficult period of transition after the Soviet Union collapsed. After the Soviet regime, the first agriculture cooperatives were established in 1992–1993 in cereals, dairy, and vegetable sectors. There were 684 agricultural services cooperative societies established during the period of 1992–2019 (The Enterprise Register of the Republic of Latvia, 2020). Nowadays 253 agriculture cooperative societies are registered (The Enterprise Register of the Republic of Latvia, 2020), but only 46 of them are recognised agricultural cooperatives.

History is an important factor influencing the institutional environment. Positive experiences of cooperative development usually have resulted in the generation of trust and increase in social capital. Development of cooperatives is influenced by the general situation in the country; a research in the EU Member States shows a clear correlation between the level of general trust as "trust in people" and cooperative performance—all New Member States have low trust and relatively little role of cooperatives (Bijman et al., 2012). In Latvia's case where the prehistory is highly antagonistic, policy makers or stakeholders should budget time for effective remedial trust building. If they cannot justify the necessary time and cost, then they should not embark on a cooperation (Ansell & Gash, 2008).

In view of the above, on the one hand, the political environment of Latvia, which is based on common guidelines of the European Union, and, on the other, national legislation, more adapted to the specifics of Latvia, form and regulate the operation and development of Latvian agricultural cooperatives.

### **2. Policy instruments for agricultural cooperatives in Latvia**

National policies highlight the role of agriculture cooperatives as an instrument for small scale farm to strengthen their competitiveness and market power in food chain.



**Source: created by the authors**

**Fig. 1. Legislative framework and domestic policy instruments of relevance to agriculture cooperatives in Latvia**

According to the Sustainable Development Strategy of Latvia until 2030, a significant future challenge is to retain and develop rural areas as qualitative living and work space by fully using the diverse potential for economic development. One of solution is rural business cooperatives. The establishment of rural business cooperatives should be supported in order to ensure efficient use of production resources, improvement of sale possibilities, and more efficient representation of rural business interests under the conditions of free market (Saeima of the Republic of Latvia, 2010).

The National Development Plan 2014–2020 is hierarchically the highest national-level medium-term planning document, closely related to the Sustainable Development Strategy of Latvia until 2030 and the implementation of the EU 2020 Strategy (CCSC, 2012).

Rural Development Programme’s 2014–2020 support options are mainly related to improving the processing capacity of local agricultural products and promoting cooperation (AREI, 2019). The largest numbers of agricultural cooperatives are in the dairy sector (29% of the total number of agricultural cooperatives) and the cereals sector (35 %), while the rest of cooperation in agricultural sectors is still an untapped potential (Ministry of Agriculture, 2019b). Various Programme activities are open for recognised agricultural cooperatives: primary producer and processing investments with separate envelopes for cooperatives; aid to producer organisations; training and innovation activities.

Primary producer investments within the planning period 2014–2020 were used by 22 cooperatives (Table 1).

Table 1

**Rural Development Programme 2014–2020 investments in agricultural cooperatives for primary treatment and processing by sectors**

Sector	Aid for investment in agricultural holdings (cooperatives envelope)			Aid for investment in processing		
	No. of cooperatives (total no. of recognized cooperatives)	No. of projects	Amount of public funding, EUR	No. of cooperatives	No. of projects	Amount of public funding, EUR
<b>Cereals</b>	14 (15)	65	20,013,438	0	0	0
<b>Dairy</b>	6 (24)	9	382,618	2	5	308,742
<b>Vegetables and fruits</b>	2 (5)	4	212,894	1	1	5,000,000
<b>Total</b>	<b>22 (46)</b>	<b>78</b>	<b>20,608,950</b>	<b>3</b>	<b>6</b>	<b>5,308,742</b>

*Source: created by the authors using the data of Paying Agency and Latvian Association of Agricultural Cooperatives (Paying Agency, 2020; LLKA, 2020)*

Cereals cooperatives have made the largest investments in primary processing, accounting for 97% of the available funding, and the dairy cooperatives for 2.7 % of the available funding (Paying Agency, 2020). Cereals and milk are the main agricultural export sector (Ministry of Agriculture, 2019). The industry weakness lies in the fact that the main export goods are raw products with no added value. In view of the cooperative investment attraction rate, one can assess the trends in sectoral fundraising ability and competitiveness of cooperatives, which generally is seen as weak.

### **3. Legislative framework of agriculture cooperatives in Latvia**

A new law on cooperative societies was adopted in 2018. Comparing with the previous version, this is an umbrella law of all kind of cooperative societies. The aim of Law is to create favourable regulatory conditions for cooperatives—voluntary associations of individuals whose purpose is to promote effective implementation of members' common economic interests (Saeima of the Republic of Latvia, 2018). As mentioned above, in order to evaluate functioning of agricultural cooperatives in the interests of members, a procedure was developed which, when the new law came into force, was even more important for the identification of agricultural cooperatives. The procedure for the recognition of cooperative societies of agricultural services was introduced in accordance with the Cabinet Regulations "Eligibility Rules for Cooperative Societies" (Cabinet of Ministers of the Republic of Latvia, 2019) in 2004. Responsibility for this procedure lies with the Ministry of Agriculture who has delegated this activity to the Latvian Association of Agriculture Cooperatives since 2010. The status of a recognised cooperative society of agricultural services is received by around 50 cooperatives every year (LLKA, 2020).

If the cooperative has been recognised, it is a kind of guarantee to the farmer that the cooperative can be trusted. In addition, obtaining the recognition status gives you the opportunity to receive national and European aid for cooperatives, as well as other statutory benefits. Every year recognition commission evaluates and grants the recognition status for one year. Idea of cooperative recognition came from Germany where a typical element in the governance of cooperatives is that every cooperative must be member of an auditing association. The same requirement is in Austria too. (Bijman et al., 2012).

Authors' analysis on the impact of innovations and key criteria on cooperative society's law and eligibility rules on the economic performance of agricultural cooperatives is presented in Table 2.

Table 2

**National legal framework and main actions influencing  
 the economic activity of agricultural cooperatives**

No.	Subject	Law of cooperative societies adopted 12 April 2018	Eligibility Rules for Cooperative Societies, Regulations No. 357, adopted 16 July 2019
1.	<b>Purpose of cooperative</b>	This Law is to create favourable regulatory conditions for cooperatives—voluntary associations of individuals whose purpose is to promote effective implementation of members' collective economic interests.	Recognition status shall be granted to a company if it provides services to its members but does not engage in production (except for the processing or treatment of the products produced by the members) and meets the criteria of these Regulations, depending on its type of activity.
2.	<b>Turnover</b>		Turnover includes the goods sold and services provided, which are necessary for production. The criteria include: The cooperative sells agricultural produce produced on its member's farm or purchased from its member, which is another cooperative. Turnover between cooperatives and members represents at least 75% of turnover, with a turnover of at least 5 members it should be 80%. Turnover with one member does not exceed 40% of the cooperative's total turnover. Cooperative has a turnover with minimum 10 members, but for a cooperative which operates in the fruit and vegetables or poultry industry or provides agricultural technical services, or whose members are only other cooperatives—with at least five members. Minimum turnover between cooperatives and members is 20,000 euros in the reporting year.
3.	<b>Profit payment procedure</b>	The profits of the cooperative may be paid out: To members determined in proportion to the amount of cooperative services it uses. Articles of association may provide that the whole profit to be disbursed to a member or its part shall be determined in proportion to the number of shares paid by the member.	The regulation does not provide patronage member's participation in the cooperative.

Source: created by the authors

**3.1. Purpose of cooperatives**

Cooperative action is only based on economic efficiency. The annotation of the Law explains that the essence of a cooperative society is the cooperation of its members for the realisation of common economic and other interests, although only the economic interests are covered by the Law. Currently, the Law only defines the economic direction of a cooperative and does not distinguish a cooperative from any other form of business. However, as several scientists have pointed out, a cooperative is more than just a business. For example, V. James Rhodes states in his article that "the cooperative generally is not simply an unconstrained money maker as may be an investor owned firm" (Rhodes, 1983). Members may experience not only an economic commitment but also an affective commitment to the cooperative (Jussila, Byrne, & Tuominen, 2012). The affective commitment is based on an emotional attachment to the cooperative (Jussila, Goel, & Tuominen, 2012; Ollila, Nilsson, & Hess, 2014), which may be demonstrated as support to the cooperative

mission. Generally, the cooperative mission is often defined in terms of marketing of pooled resources. Affective commitment has also been described as commitment to collective action (Borgen, 2001; Cechin, Bijman, Pascucci, & Omta, 2013; Grashuis & Cook, 2019). In other words, cooperative members who are as well owners and users are not only interested in making profits as investors, but they also have an essential social component to the cooperative, it is a way of life (Torgerson & Reynolds, 1999). That means when the non-economic factors are strong, members may patronise the cooperative even if the price or service of the cooperative is not as good as the ones of alternative firms (Jussila, Goel, et al., 2012).

The European Commission and the International Cooperative Alliance define cooperative as people-centred enterprise jointly owned, controlled and run by and for their members to realise their common economic, social and cultural needs and aspirations (European Commission, 2020, International Cooperative Alliance, 2020).

In the light of other authors and Internal Cooperative Alliance (ICA) and the EU cooperative principles of action, which also include cooperative social functions, the Latvian institutional framework needs to be supplemented with the basic principles of cooperation, including social components. Cooperative's social factors are important for its economic activity, and these factors are the knowledge and level of understanding, ownership and confidence indicators of members.

Ignoring this social factor in the Cooperative Societies Law of Latvia, according to any legislator, equates agricultural cooperatives with an investor enterprise, thus having a negative impact on the competitiveness of cooperatives. For example, the provisions of the Enterprise Income Tax Law (Saeima of the Republic of Latvia, 2017) regarding representation expenses and expenses for sustainable activities of staff, training and consolidation of cooperative members and employees are treated as representation expenses and are subject to income tax. In other words, representation is regarded as one of the basic functions of a cooperative, which gives a negative impact on the economic performance of cooperatives as a whole.

### **3.2. Turnover**

On one hand, cooperatives can be formed to meet many different needs and aspirations, and there are many different ways in which cooperatives can do so while respecting the principles and values of collaboration. The form of the cooperative will largely depend on what problem the cooperative is primarily trying to solve—lack of access to certain types of goods, low price or poor market access of a certain product etc. Almost any cooperative can have more than one feature. Farmers more often are members of producers' cooperative. There are many ways in which these groups can cooperate: they can buy farm inputs, equipment and insurance, hire managers and sales staff to market and advertise together, or use storage or processing equipment or distribution network. These are also sometimes known as marketing cooperatives in which each farmer maintains a fairly independent path to market, but shares the brand (Austin Cooperative Business Association, 2014). In the agricultural sector we now can see also hybrid forms of cooperatives. These hybrid forms have two aspects: firstly, in adopting a multi-stakeholder governance structure and, secondly, in terms of using multiple resources (Spear Roger, 2011; Chaddad, 2012).

On the other hand, the criterion stipulated in the Regulations—a cooperative sells agricultural produce produced on its member's farm—promotes the cooperative that sells the produce produced by its members, but it limits the opportunities for other forms of agricultural cooperatives, such as agricultural cooperatives that provide members with inputs, feed, breeding material.

However, it should be noted that cooperatives can combine different forms of activity. The current regulatory framework restricts strengthening of competitiveness of agricultural cooperatives in this way.

### **3.3. Profit payment procedure**

The articles of association may consolidate the two types of profit sharing. For example, if a cooperative wants to attract an investor-type member, it may stipulate in its articles of association that a proportion of the cooperative's profits shall be distributed in proportion to the amount of its contribution. The Regulations, however, do not provide for the participation of a patronage member in the cooperative and also the issue of creating hybrid cooperatives is missing from the Law. In the EU Member States that allow both approaches, attracting foreign investors is still at an early stage (Bijman et al., 2012).

On one side, this kind of regulation helps policy makers to influence agriculture cooperatives and guide them to directions that are important for policies—environmental, sustainable, "Green Deal" issues (European Commission, 2019b). Scholars also stress the development of a fuller understanding of the role of cooperatives specifically, and collective action in the economy in general is likely to become more important given the emergence of a new set of issues facing the world in the twenty-first century. Food security is one of these issues, while other are health care, carbon sequestration and trading, environmental conservation and protection, alternative energy sources, and alternative food sources (e.g., organic, local). Given the importance of externalities and nonmarket impacts (e.g., impact on the local community) in all these issues, a collective response of some sort to these issues would seem to be necessary (Fulton & Giannakas, 2013). States and markets are not separate, and must, therefore, come together and be reinforced by citizen action, especially for meeting global public objectives such as sustainable development (Scoones, 2016).

On the other side, Regulations No. 357 of 2019 (Cabinet of Ministers of the Republic of Latvia, 2019) restrict the activities of agriculture cooperatives by recognising and considering only direct agricultural services to members such as accounting, financial, legal, and project preparation services which are appropriate and enhance the competitiveness of the cooperative. In order to support the development of Latvian agricultural cooperatives, it is necessary to modernise these regulations, with the emphasis on the cooperatives' operational objective—to strengthen the competitiveness of agricultural holdings in food chain (European Commission, 2019a), and evaluate all the services provided to the cooperative members.

### **Conclusions, proposals, recommendations**

- 1) Since Latvia is small and open economy, to overcome the communist legacy there is a need to invest resources and time in building trust and in the understanding of the foundations of cooperation. This should be taken into account when designing policies that affect the competitiveness of the agricultural sector as a whole.
- 2) There are financial instruments and political support available to develop and strengthen agricultural cooperation for added value products, to increase income for farmers and make them stronger in food chain, but:
  - 22 out of 46 recognised cooperatives used the European Agricultural Fund for Rural Development support; 97 % of funding for investments in first processing received cereals sector, and only 2.7 % of the amount were allocated to the second largest agricultural export sector—dairy sector;
  - the amount of members in agricultural cooperatives has not risen in a ten year period.

- This indicates that cooperatives do not have the financial resources and / or strategies to develop their activities—patronage of members is weak. There are instruments which could be used for strengthening the competitiveness of agricultural cooperatives, but there is still mistrust and lack of long-term planning between farmers.
- 3) The new Cooperative Societies Law is progressive and, overall, promotes the competitiveness of cooperatives. However, it is necessary to clarify the definition of cooperative in the regulatory framework to include the social component highlighting the distinction between cooperative and investor enterprise.
- 4) Also the Regulations "Eligibility Rules for Cooperative Societies" should be revised to expand the range of services provided by the cooperative to its members. This would facilitate expansion of cooperatives and more meaningful participation of their members. Cooperatives should be stimulated to offer more products and services to members.
- 5) Taking into account the influence of history and the scientific research on the importance of trust as an indicator of influence on the development of the cooperative, research on the internal operating environment of Latvian agricultural cooperatives and its influencing factors is necessary.

### Bibliography

1. Ansell, C., & Gash, A. (2008). Collaborative Governance in Theory and Practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571. Retrieved from <https://doi.org/10.1093/jopart/mum032>
2. AREI. (2019). Annual Program Report Latvia - Rural Development Program, Year 2018. Retrieved March 11, 2020, from [https://www.zm.gov.lv/public/ck/files/LAP\\_gada\\_zinojums\\_2018.pdf](https://www.zm.gov.lv/public/ck/files/LAP_gada_zinojums_2018.pdf)
3. Austin Cooperative Business Association. (2014). Types of Cooperatives. *Website Austin Cooperative Business Association*, 1–5. Retrieved from [http://www.acba.coop/types\\_of\\_cooperatives](http://www.acba.coop/types_of_cooperatives)
4. Barrett, C. B. (2008). Smallholder Market Participation: Concepts and Evidence from Eastern and Southern Africa. *Food Policy*, 33(4), 299–317. Retrieved from <https://doi.org/10.1016/j.foodpol.2007.10.005>
5. Bennett, D. (2014). Eastern German Cooperative Farming: On the Cusp of a New Generation. *German Politics and Society*, 32(4), 56–68. Retrieved from <https://doi.org/10.3167/gps.2014.320404>
6. Bijman, J., Hanisch, M., & van der Sangen, G. (2014). Shifting Control? The Changes of Internal Governance in Agricultural Cooperatives in the EU. *Annals of Public and Cooperative Economics*, 85(4), 641–661. Retrieved from <https://doi.org/10.1111/apce.12055>
7. Bijman, J., Iliopoulos, C., Poppe, K. J., Gijssels, C., Hagedorn, K., Hanisch, M., ... Ger van der Sangen. (2012). Support for Farmers. In *Final Report. Support for farmers' Cooperatives - Study*. Retrieved from <https://op.europa.eu/en/publication-detail/-/publication/a2929ebd-e7d0-4ccf-a744-3bf5a4caeffd/language-en/format-PDF/source-search>
8. Borgen, S. O. (2001). Identification as a Trust Generating Mechanism in Cooperatives. *Annals of Public and Cooperative Economics*, 72(2), 209–228. Retrieved from [onlinelibrary.wiley.com/doi/pdf/10.1111/1467-8292.00165?casa\\_token=RsdawtmF8WsAAAAA:Hzzjk2\\_FMeVbB\\_5KRRoeqLUKMxqsNjPcyWTS44JgqWQGe8X9RkaEngNZHwLUVaXmsJut84OpvBMNew](https://onlinelibrary.wiley.com/doi/pdf/10.1111/1467-8292.00165?casa_token=RsdawtmF8WsAAAAA:Hzzjk2_FMeVbB_5KRRoeqLUKMxqsNjPcyWTS44JgqWQGe8X9RkaEngNZHwLUVaXmsJut84OpvBMNew)
9. Cabinet of Ministers of the Republic of Latvia. (2019). Eligibility Rules for Cooperative Societies (Kooperatīvo sabiedrību atbilstības noteikumi). Retrieved March 11, 2020, from <https://likumi.lv/ta/id/308382-kooperatīvo-sabiedrību-atbilstības-noteikumi>
10. CCSC. (2012). National Development Plan of Latvia for 2014–2020. Retrieved from Cross-Sectoral Coordination Centre (CCSC) website: [https://www.pkc.gov.lv/sites/default/files/inline-files/NDP2020\\_English\\_Final\\_\\_1.pdf](https://www.pkc.gov.lv/sites/default/files/inline-files/NDP2020_English_Final__1.pdf)
11. Cechin, A., Bijman, J., Pascucci, S., & Omta, O. (2013). Decomposing the Member Relationship in Agricultural Cooperatives: Implications for Commitment. *Agribusiness*, 29(1), 39–61.
12. Chaddad, F. (2012). Advancing the Theory of the Cooperative Organization: The Cooperative as a True Hybrid. *Annals of Public and Cooperative Economics*, 83(4), 445–461. Retrieved from <https://doi.org/10.1111/j.1467-8292.2012.00472.x>
13. DeBoe, G. (2019). *Impacts of Agricultural Policies on Productivity and Sustainability Performance in Agriculture: A Literature Review*. (141), 79. Retrieved from <http://www.oecd.org/tad/agricultural-policies/innovation-food-agriculture.htm>
14. European Commission. (2019a). The Common Agricultural Policy. Retrieved from [https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key\\_policies/documents/cap-separating-facts-from-fiction\\_en.pdf](https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/cap-separating-facts-from-fiction_en.pdf)
15. European Commission. (2019b). The European Green Deal. Retrieved from [https://ec.europa.eu/info/publications/communication-european-green-deal\\_en](https://ec.europa.eu/info/publications/communication-european-green-deal_en)

16. European Commission. (2020). Cooperatives. Retrieved March 5, 2020, from [https://ec.europa.eu/growth/sectors/social-economy/cooperatives\\_en](https://ec.europa.eu/growth/sectors/social-economy/cooperatives_en)
17. FAO. (2014). The State of Food and Agriculture. Innovation in Family Farming. In Food and Agriculture Organization of the United Nations. Retrieved from <http://www.fao.org/3/a-i4040e.pdf>
18. Fulton, M., & Giannakas, K. (2013). The Future of Agricultural Cooperatives. In *Annual Review of Resource Economics* (Vol. 5). Retrieved from <https://doi.org/10.1146/annurev-resource-091912-151928>
19. Grashuis, J., & Cook, M. L. (2019). A Structural Equation Model of Cooperative Member Satisfaction and Long-term Commitment. *International Food and Agribusiness Management Review*, 22(2), 247–263. Retrieved from <https://doi.org/10.22434/IFAMR2018.0101>
20. International Cooperative Alliance. (2020). What is a Cooperative? Retrieved March 11, 2020, from <https://www.ica.coop/en/cooperatives/what-is-a-cooperative>
21. Jussila, I., Byrne, N., & Tuominen, H. (2012). Affective Commitment in Co-operative Organizations: What Makes Members Want to Stay? *International Business Research*, 5(10), 1–10. Retrieved from <https://doi.org/10.5539/ibr.v5n10p1>
22. Jussila, I., Goel, S., & Tuominen, H. (2012). Member Commitment in Co-operatives: The Utilitarian Approach. *Business and Management Research*, 1(3), 9–16. Retrieved from <https://doi.org/10.5430/bmr.v1n3p9>
23. LLKA. (2020). Latvian Association of Agricultural Cooperatives. Retrieved March 5, 2020, from <http://www.llka.lv/atbilstibas-lpk/>
24. Saeima of the Republic of Latvia. (2017). Enterprise Income Tax Law (Uzņēmumu ienākuma nodokļa likums). Retrieved March 11, 2020, from <https://likumi.lv/ta/id/292700-uznemumu-ienakuma-nodokla-likums>
25. Saeima of the Republic of Latvia. (2018). Co-operative Societies Law (Kooperatīvo sabiedrību likums). Retrieved March 11, 2020, from <https://likumi.lv/ta/id/298656-kooperativo-sabiedribu-likums>
26. Ministry of Agriculture. (2019a). Foreign Trade. Retrieved March 5, 2020, from Foreign Trade in Food, Agricultural and Fishery Products in the Half of 2019 website: <https://www.zm.gov.lv/zemkopibas-ministrija/statiskas-lapas/partikas-lauksaimniecibas-un-zivsaimniecibas-produktu-arejas-tirdzniec?id=1577#jump>
27. Ministry of Agriculture. (2019b). Latvia -Rural Development Programme 2014 - 2020. Retrieved March 11, 2020, from [https://www.zm.gov.lv/public/files/CMS\\_Static\\_Page\\_Doc/00/00/01/50/34/Programme\\_7.pdf](https://www.zm.gov.lv/public/files/CMS_Static_Page_Doc/00/00/01/50/34/Programme_7.pdf)
28. OECD. (2019). Inovācijas, lauksaimniecības produktivitāte un ilgtspējība Latvija. In *Inovācijas, lauksaimniecības produktivitāte un ilgtspējība Latvija*. Retrieved from <https://doi.org/10.1787/279bde8c-lv>
29. Ollila, P., Nilsson, J., & Hess, S. (2014). Farmers' Reactions to the Internationalisation of Cooperatives. *Agricultural and Food Science*, 23(4), 291–306. Retrieved from <https://doi.org/10.23986/afsci.45222>
30. Paying Agency. (2020). RDP 2014 - 2020. Retrieved March 5, 2020, from Information of Investment Projects website: <http://www.lad.gov.lv/lv/atbalsta-veidi/projekti-un-investicijas/operativa-informacija/>
31. Rhodes, V. J. (1983). The Large Agricultural Cooperative As a Competitor. *American Journal of Agricultural Economics*, 65(5), 1090–1095. Retrieved from <https://doi.org/10.2307/1240426>
32. Saeima of the Republic of Latvia. (2010). Sustainable Development Strategy of Latvia Until 2030. Retrieved from [https://www.pkc.gov.lv/sites/default/files/inline-files/LIAS\\_2030\\_en\\_0.pdf](https://www.pkc.gov.lv/sites/default/files/inline-files/LIAS_2030_en_0.pdf)
33. Scoones, I. (2016). The Politics of Sustainability and Development. *Annual Review of Environment and Resources*, 41(1), 293–319. Retrieved from <https://doi.org/10.1146/annurev-environ-110615-090039>
34. Soboh, R. (2009). *Econometric Analysis of the Performance of Cooperatives and Investor Owned Firms in the European Dairy Industry*. Retrieved from <http://library.wur.nl/WebQuery/wda/lang/1924922>
35. Spear Roger. (2011). Formes Cooperatives Hybrides. *Recma: Revue Internationale de l'économie Sociale*, 320. Retrieved from <http://recma.org/node/1281>
36. Tadesse, G., Abate, G. T., & Ergano, K. (2019). The Boundary of Smallholder Producers' Cooperatives: A Conceptual and Empirical Analysis. *Journal of Agricultural Economics*, 70(2), 529–549. Retrieved from <https://doi.org/10.1111/1477-9552.12310>
37. The Enterprise Register of the Republic of Latvia. (2020). Basic data on entities registered. Retrieved March 11, 2020, from <https://www.ur.gov.lv/en/specialized-information/open-data/>
38. Torgerson, R. E., & Reynolds, B. J. (1999). Evolution of Cooperative Thought, Theory, and Purpose. *Journal of Cooperatives*, 13, 1–20.

## **IN WHAT DIRECTION IS AGRICULTURAL SPECIALIZATION HEADED IN CENTRAL AND EASTERN EUROPE? (2005-2016)**

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**Abstract.** The paper deals with the main directions of specialization in Central and Eastern European Countries' (CEECs, EU10) agriculture after the EU's Eastward Enlargement. We analyse and compare growth and productivity advantages of specialized farm types by physical size (in hectare) in EU10 member-states to the EU10/27/15 average based on EUROSTAT data in the period of 2005-2016. We focus on exploring the main directions of specialization using such indicators as the number of specialized farms, land (Utilized Agricultural Area, UAA) and labour (Agricultural Working Unit, AWU) use on the input side, average farm size by land and labour use as well as area-, labour-, and total productivity on the output side.

We conclude that the directions of specialization in farming in EU10 were based on the traditional farm production structure making the latter better able to adjust and take advantages of Common Agricultural Policy. Concerning production growth rate, the three leading specialization types of CEECs' farms were: (i) cattle rearing and fattening, (ii) cereals, oilseed and protein crops and (iii) fruits and citrus fruits. These three specialization types of farms – in the same ranking order – also increased land (UAA) and labour (AWU) use well above the average. Specialized cereals farms and cattle rearing and fattening farms were also ranked in top three by number. Both cereals and fruits specialized farms have leading position in growth rate of land and labour use and also are in top three in growth rate of land area and total farm productivity. Cereals and fruits specialized farms also more than doubled labour productivity during the first decade after the EU's Eastward enlargement but did not rank in the top three in this category.

**Key words:** EU agriculture, specialization, farm size, productivity, CEECs.

**JEL code:** Q1

### **Introduction**

Since 2004, there have been significant changes in farm structure both in EU member states and even more so in the EU10, backed by increasing specialization. Within the EU, the dynamics of agricultural development in the old and new member states have been different when considering production structure, specialization and farm size. This paper focuses on the main directions of specialization of farms with UAA (some 2.5 % of specialized farms have no land at all and are not regarded as specialized ones in this study) and shows the extent to which the advantages of specialization have helped the EU10 agriculture catch up over a decade after the EU's Eastward enlargement. We analyse the development of ten types of farm specializations in the EU10 and compare the results both to the EU27/15 average and at the country level in the EU10 using EUROSTAT data for 2005-2016 period.

### **Literature review**

Over a quarter of a century ago, Tangermann shocked even professionals when claiming that "The structural changes ... going on in Central Europe's agriculture, both on farms and in upstream and downstream sectors, are shaking the foundations of decision-making and economic activities..." (Tangermann, 1994, pp. 379). As real-life data shows, Tangermann had not overestimated the challenge of EU10 farmers at all. Forgacs (2002) pointed out that agriculture output of CEECs declined significantly by 20-60% (with maximal decline in the Baltics) in 1993-1994 compared to that of years prior to radical reforms in these countries. Some of CEECs have had a very large number of small farms. In 2000, small farms cultivated 80 % or more of the land in Baltic states, Poland, Slovenia and Romania. In contrast, Slovakia, Latvia, the Czech Republic and Hungary followed a different agricultural policy, leading to about three quarter of the agricultural land be used by large farms with

an average size of 1360 ha, 1135 ha, 998 ha and 960 ha respectively. Small farms have been most affected by the move towards market economies. Within ten years after the EU's Eastward enlargement, 2.8 million mostly small (< 5ha) farms have disappeared in EU10, bringing a second shock for CEECs farmers within two decades.

The role, importance, development and policy aspects of small farms have always got special attention both from researchers and CAP policy makers, both in order to find better ways to help them, and to eliminate weaknesses that CAP had in its policy regarding small farms (EP resolution, 2014; Davidova S,-Bailey A, 2014; Dwyer J, 2014; Davidova S, 2014).

In 2016, some two-thirds of the EU's farms had UAA below 5ha, and close to half of them came from Romania and Poland having decisive agricultural potential in EU10 agriculture. Small farms did their best to find a mixture of crop specialization to increase their chances for survival. Small farms are strong pillars of rural development in the EU and their importance cannot be questioned as they can reduce the risk of rural poverty and generate additional income and food (EUROSTAT. 2018. pp. 18).

The strengthening of the market position of small farms requires efforts from farms themselves, especially with regards to the attitude of being more open to deepening cooperation, as well as looking for new possibilities to become integrated into modern food chains (Csaki C., – Forgacs C., 2008; Gordon M., et al., 2014; Rabinowitz E., 2014). Agricultural policy should pay special attention to Semi-Subsistence Farms (SSFs) in New Member States (Erjavec E., et al., 2014).

"The Central and Eastern European countries (CEECs) viewed CAP subsidies as a major financial benefit of EU membership, and in accession negotiations they fought hard to gain full access to CAP direct payments for their farmers." A hotly debated issue at the Copenhagen summit was the distribution of direct payments to farmers of New Member States (NMS). The discussion led to an agreement to use a gradual phasing-in of direct payments to NMS, reaching full levels over ten years (Baun M., et al. 2009. pp. 271). This ushered in a challenging transitional period for small farms in the EU10 trying to survive the competition with a handicap in subsidies that was only to be eliminated in 2013 or possibly earlier if using national financial sources.

Large and very large farms in the EU28 have focused more on taking advantage of specialization by extending their land to more than 90% of the total utilized agricultural area in 2013 (EUROSTAT 2018. pp. 20).

Forgacs (2016) showed that small specialized farms achieved higher growth in total productivity backed by intensive labour use than non-specialized farms. In addition, the standard output of specialized farms was higher than that of non-specialized farms in 2005 and 2013 (Forgacs C., 2017). Csaki and Jambor (2018) conducted a study between 1997-2000 and 2013-2016 concerning the convergence of CEECs and Countries of Independent States (CIS). Although they have demonstrated the narrowing of the gap between CEECs and CIS countries in certain areas, their results are unconvincing on the convergence of the CEECs and CIS agriculture production on the whole. Forgacs (2019) analysed the performance of specialized farms by farm types and compared results to those of non-specialized ones. He concluded that among large farms, those that were specialized performed better in the EU10 than their non-specialized counterparts and sustained relatively smaller losses in their labour force. Specialized farms in the EU10 have increased productivity at a higher rate than non-specialized farms (Forgacs C., 2019).

The 2013 Farm Structure Survey drew attention to the fact that while smaller farms (in economic terms) tended to engage in a range of different activities, specialization led to the pursuit of a single

type of farming. Specialization of larger farms has resulted in an increasing number of specialized horticultures, dairy, pig and cattle rearing farms (EUROSTAT 2016. pp. 19).

The aim of this paper is to give a deep analysis of different aspects of farm specialization of EU10 underlying those indicators where advantages of specialization can be observed over 2005-2016 helping to catch up of the EU10' agriculture.

## **Methodology**

In an effort to obtain a more sophisticated picture of farms' performance from a specialization point of view in EU10,-15,-27, we used a comparative EUROSTAT data set of 2005-2016, covering the longest period after the EU Eastward enlargement. Indices were used to draw attention to the main structural changes in EU10 against EU15,-27. Key indicators such as farms' labour use (Agricultural Work Unit, AWU), land use (Utilized Agriculture Area, UAA) and production (Standard Output, SO) were analysed. Along with the static analysis, a dynamic approach was also employed to project possible future tendencies. The indicators make it possible to follow productivity development of inputs (land and labour) in EU10 against EU15. Growth of farm size by land, area, labour and total productivity was calculated for cross country analysis on the one hand, and for dynamic analysis of changes in farm structure on the other. Research results of specialized farms in EU10 were compared to that EU15,-27 average. The analysis of growth of observed indicators provides insight into the patterns of farm structure development in 10 specialized farm types<sup>1</sup> in the EU10.

## **Research results and discussion**

### ***Increasing share of the number and production (SO) of specialized farms***

After a deep decline, there were still 10.3 million working farms in the EU27 in 2016, compared to the 14.5 million farms of 2005. 56.4 % of the 10.3 million were farms in the EU10, where the overall decline exceeded that of the EU27. In 2016, 49.2 % of farms with UAA were specialized in the EU27, with 44.9 % of these belonging to the EU10, which had four specialized farms in every ten. The decrease in the number of specialized farms with UAA in the EU15 (17.8 %) exceeded that of EU10 (16%). The survival rate of specialized farms exceeded that of total farms in the EU27 with an even more pronounced difference between the two types of farming in the EU10. An increase in production of specialized farms was a general phenomenon in all EU10 countries with Latvia (230.9 %), Bulgaria (157.1 %), Lithuania and Slovakia (148-148 %) leading the pack.

Specialization helped the EU10 agriculture slow down the decline in the number of farms, all the while increasing the contribution of specialized farms to total production by 9 % in EU27 and 39.7 % in EU10.

### ***Structural development of specialized farms at the EU10 level***

Concerning the directions of specialization in the EU10, the number of specialized farms in cereal production was the highest among the ten specialized farm types, followed by poultry and dairy farms, both in 2005 and 2016. The share of production of farms specialized in cereal in total specialized farm production increased to 40.3 % in 2016 from 25.2 % in 2005. Number of vineyards essentially did not change. However, the number of farms specialized in cattle rearing and fattening

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<sup>1</sup> The following specialized farm types give the basis for analysis. 1. Specialized in cereals, oilseed and protein crops. 2. Specialized in horticulture indoor. 3. Specialized in horticulture outdoor. 4. Specialized in vineyards. 5. Specialized in fruit and citrus fruit. 6. Specialized in olive oil. 7. Specialized in dairy farming. 8. Specialized in cattle-rearing and fattening. 9. Specialized in pig production. 10. Specialized in poultry production.

was rather low in the EU10 in 2005 but has risen by 83.4 % from 2005 to 2016. Farm specialization has been combined with land concentration. In the EU10, 71.4 % of land cultivated by specialized farms went to cereals specialization in 2016, up from 60.3 % in 2005. Dairy farms lost 5% of their land over the decade while farms specialized in cattle rearing and fattening used 148.2% more land in 2016 than they did a decade prior. As far as the labour use is concerned, dairy and cereals specialized farms were the leading ones throughout the decade. In 2005, dairy farms in the EU10 used one third of the labour force of specialized farms, while farms specialized in cereals used 25 % of the farm labour force. In 2016, the extended cereals production surprisingly already used 38.5 % of labour of specialized farms and with corresponding share of dairy farms hovering a bit over 25 %.

Table 1

**Number and standard output of farms in EU10,-15,-27 (2005, 2016)**

Countries	2005			2016			Share of spec in total 2016/2005
	Total farms	Spec farms with UAA total	Share of spec in total farms	Total farms	Spec farms with UAA total	Share of spec in total farms	
<b>Number (Million)</b>							<b>%</b>
EU27	14.5	6.1	42.4	10.3	5.1	49.2	115.9
EU10	8.6	2.7	31.9	5.8	2.3	39.2	122.8
EU15	5.8	3.4	57.9	4.5	2.8	62.3	107.6
EU10/15	1467	80.8	55.1	130.5	82.0	62.9	114.2
<b>Standard Output (Million EURO)</b>							<b>%</b>
EU27	286345	176339	61.6	362083	243077	67.1	109.0
EU10	42262	17510	41.4	59907	34667	57.9	139.7
EU15	243267	158374	65.1	301461	207969	69.0	106.0
EU10/15	17.4	11.1	63.6	19.9	16.7	83.9	131.8

Source: Based on EUROSTAT data

The production value of specialized farms in the EU10 amounted to EUR 17.5 billion in 2005 that went up to EUR 34.7 billion (an increase of 98 %) in 2016 well above the rate of increase in the EU15 (31 %) (Table 1). In 2005, 26.7 % of the production of specialized farms in the EU10 came from dairy farms, exceeding the corresponding figure in the EU15 (25.2 %), meanwhile in case of cereals that figure was 25.2 % in the EU10 and only 8.3 % in the EU15. In the EU10, the share of dairy farms production decreased from 26.7 % in 2005 to 22.3% in 2016, but that of cereals farms showed an upswing to 40.3 % from 25.2 % in 2005. In the EU10, the top 3 leading specialized farms (dairy, cereals and poultry) gave two thirds of the total production of specialized farms in 2005, with their contribution increasing further to 77.7 % in 2016. The corresponding averages in the EU15 were 42.8 % and 49.3 %, respectively.

Farms by physical size are bigger in EU15 than EU10. In 2005, the average farm size in the EU27/10/15 was 11.9 ha, 5.5ha and 21.4 ha respectively. The average farm size of specialized farms was larger when compared to non-specialized farms in general (EU27/10/15). The ratio of average farm size by land between EU15 and EU10 was higher than that of specialized farms. In the EU15, the average size of specialized farms was smaller than the overall average farm size by some 10 % both in 2005 and 2016. In the EU10, the picture was the opposite, the average farm size of specialized farms exceeded that of total farms both in 2005 and 2016 and, the ratio between the two increased over time.

### ***Productivity indicators of specialized farms in the EU10***

Production value of specialized farms on average exceeded that of non-specialized farms in the EU15 and in the EU10. In 2005, average production of specialized farms (SO/spec farm) in the EU10 amounted to EUR 6403, only 13.7 % of that of the EU15, indicating that the total productivity level of EU10 specialized farms is well behind that of EU15. The two types of specialized farms in the EU10 where this figure was the largest were cereals (23.8 %) and cattle rearing and fattening (23.2 %). The average production of specialized farms in the EU10 increased by 137.4 % over the ensuing decade reaching 20.3 % of that of EU15 in 2016. 8 out of 10 specialization farm types of the EU10 showed higher growth when compared to the EU15 average. Per farm production value caught up more dynamic in poultry, cereals and fruits specialized farms (growth by 218.7 %, 175.6 %, and 172.9 %).

In 2005, the gap between average area productivity (SO/UAA) of specialized farms in the EU10 and EU15 was narrower than the gap between total farm productivity in the EU10 and EU15. Specialized farms in the EU10 have made significant progress in catching up since 2005, increased area productivity reaching 44.5 % of that of the EU15 average in 2016. In 2005, area productivity of cereals (63.8 %), cattle rearing and fattening (52.1 %) and poultry farms (52 %) of the EU10 already exceeded 50 % of EU15 average. By 2016, due to high growth (apart from olive farms) area productivity was more than 50 % of that of the EU15 average in already 4 out of 9 specialized farm types. Poultry and cereals specialized farms have the highest EU10/EU15 ratio at 81.1 % and 74.2 % respectively, while this figure in case of pigs and cattle rearing and fattening specialized farms was 65.3 % and 58.9 % respectively. We conclude that when considered as contributors to the EU10 agriculture, specialized farms have achieved remarkable growth in area productivity, pushing the EU10 average figure closer to that of the EU15. Farms specializing in pigs almost tripled production value per hectare, poultry farms doubled and cereals farms close to doubled their production value per hectare between 2005 and 2016. Progress notwithstanding, specialized farms in the EU15 on average produced EUR 2982 per hectare in 2016 compared to the EU10 average of EUR 1326 per hectare.

Concerning labour productivity (SO/AWU), the difference between the EU10 and EU15 farms is quite big on the whole. In 2005 (and 2016 respectively), the average EU10 labour productivity was 14.8% (20.9% resp.) of the EU15's corresponding measure, although when restricted to specialized farms, the figure improved to 18.9 % (25.8 % resp.). One working unit (AWU) produced a production value EUR 9,220 in the EU10, while the same figure was EUR 48,848 in the EU15 in 2005. However, labour productivity of specialized farms in the EU10 rose by 108.1 % exceeding the growth rate in the EU15 and reaching 25.8 % of the EU15 average in 2016. As we have already pointed out, specialized farms in the EU10 saw a smaller decline in their labour force between 2005 and 2016 that did non-specialized farms (5.3 % against 34.3 %). This could easily have led to worsening labour productivity measures. The fact that labour productivity actually improved over this period on specialized farms is due to their ability of improve the effective use of labour, reflecting a better adjustment to production needs.

### ***Main characteristics of farms by farm specialization types***

In the EU10, the production of specialized farms doubled between 2005 and 2016, meanwhile total production increased by only 41.8 %. The most important specialization types of farming by production in the EU10 are cereals, dairy and poultry farms with a 66.7 % share of the total

specialized farm production in 2005, which rose to 77.7 % in 2016, with decreasing contributions from dairy and increasing contribution from cereals. These three types of specialization constituted three quarters of the specialized farms in 2005 and slightly more in 2016. Within these three specializations, the number of cereal farms grew significantly, while the number of poultry and dairy farms each declined by about 25 %. As to land use, the share of cereals and dairy farms amounts to 85.2 % in 2005 and 88.2 % in 2016. The three specialization types of farms play an important role in labour use as well. In 2005, 71.1 % of specialized farm labour worked on cereals, poultry and dairy farms, a figure that increased to 74.4 % in 2016. In the EU10, farms found specialization in fruits and cattle rearing and fattening more profitable compared to previous period and started to increase production above the average.

Concerning farm size by land, radical changes have taken place in the EU10. In 2005, the average size of specialized farms in the EU10 was 6.8 ha, where cattle rearing and fattening, cereals and dairy farms were well above the average. In 2016, the average size of cattle rearing and fattening (22.1 ha) and cereals (18.7 ha) were the largest, while the highest growth (162.6 %) took place in outdoor horticulture in EU10. Farms specialized in poultry and fruits also significantly increased land area (by 60.6 % and 55.5 % respectively). Specialized farms in the EU10 accommodated an average of 0.7 AWU labour in 2005, ranging from 0.4 ha in poultry to 1.7 in indoor horticulture. Growth dynamics were significant in dairy farms (growth by 110.8 %), while fruits, cereals and outdoor horticulture also demonstrated above average growth. We note however, that the difference between the lowest and highest levels increased (0.4 and 2.8 AWU). In 2016, apart from olives, the average size of labour used by specialized farms in EU10 already exceeded that of the EU15 in dairy (by 34.1 %), cattle rearing and fattening (by 17.4 %) and cereals (by 14.8 %). Still, the size of specialized farms by land in the EU15 was more than double that of the EU10, with vineyard sizes six times bigger than their EU10 counterparts.

### ***Development of specialization in EU10 by countries***

According to data, it is obvious that all EU10 countries went through farm structure development by giving priority to specialization in order to adjust to the Common Agricultural Policy. In all EU10 countries, except Slovenia where level of specialization was above EU10 average in 2005, the share of specialized farms increased from 31.9 % in 2005 to 39.2 % in 2016. The highest growth of specialization took place in Lithuania and Latvia (76.7 % and 76.2 %) followed by Bulgaria (66.6 %) and the Czech Republic (33.3 %). A key feature of farm structure development in the EU10 was the increased number of farms specialized in cereals production and cattle rearing and fattening in general, and an enormous growth in number of poultry farms in the Baltic countries<sup>1</sup>. The production of specialized farms doubled in the EU10, but tripled in Latvia, and more than doubled in Bulgaria, Lithuania and Poland. In the EU10, more than half of the production came from specialized farms in 2016. The growth of the share of specialized farms in total farms was the highest in Lithuania and Romania (60.6 % and 59.1 %). In 2016, in seven of the EU10 countries specialized cereals farms led production, while in Estonia and Poland dairy farms did, and in Slovenia cattle rearing and fattening was most productive.

The average size (by area) of specialized farms of the EU10 increased by 67.4 % from 2005 to 2016 with big differences between EU10 countries (cereal farm sizes, for example, ranged between 10.1 ha (Slovenia) and 167 ha (Czech Republic)). In five out of the EU10 countries average cereals

<sup>1</sup> Lithuania and Latvia saw a 400% increase, and Estonia witnessed a 40% increase in the number of poultry farms.

specialized farm size exceeded that of the EU15 average. In three of these five countries the average cereal farm size was at least 140 ha compared to the EU15 average of 46.9 ha.

The relative size of average production per farm between EU10 and EU15 is highest for cereals (29.6 %), cattle rearing and fattening (29.0 %) and fruits farms (25.7 %). In all other types of farm specialization this figure is close to 20% or less, indicating that there is still a big difference in average production of specialized farms between EU10 and EU15 in 2016. The growth rate of SO/farm, SO/UAA and SO/AWU of specialized farms exceeded that of non-specialized farms in the EU10 but it was opposite in the EU15 (Table 2).

Table 2

**Dynamics of economic indicators in EU10 and EU15, % (2005-2016)**

Farms	Dynamics of SO/ (FARM, UAA, AWU) in EU10,-15 in 2005-2016, % (2005=100)				
	2005	2007	2010	2013	2016
	<b>SO/ farm</b>				
EU10 NON-SPECIALIZED FARMS*	100.0	101.7	120.5	146.6	168.2
EU10 SPECIALIZED FARMS with UAA	100.0	116.2	157.9	200.5	237.4
EU15 NON-SPECIALIZED FARMS*	100.0	103.1	125.9	150.8	161.0
EU15 SPECIALIZED FARMS with UAA	100.0	103.4	113.5	145.7	159.8
	<b>SO/UAA</b>				
EU10 NON-SPECIALIZED FARMS*	100.0	97.0	101.9	119.6	133.8
EU10 SPECIALIZED FARMS with UAA	100.0	99.3	108.7	123.8	140.7
EU15 NON-SPECIALIZED FARMS*	100.0	98.1	102.5	112.2	122.4
EU15 SPECIALIZED FARMS with UAA	100.0	99.3	105.0	111.2	122.0
	<b>SO/AWU</b>				
EU10 NON-SPECIALIZED FARMS*	100.0	109.2	136.6	160.6	192.3
EU10 SPECIALIZED FARMS with UAA	100.0	111.9	155.6	178.8	208.1
EU15 NON-SPECIALIZED FARMS*	100.0	99.3	125.9	141.2	153.4
EU15 SPECIALIZED FARMS with UAA	100.0	101.0	121.2	138.0	152.5

**\*Including specialized farms without UAA**  
**Source: Based on EUROSTAT data**

Looking at area productivity (SO/UAA), the specialized farms of the EU10 achieved a relatively higher ratio of 44.5 % against EU15 average in 2016. In five types of specialized farms, apart from olives, this ratio is already above 50%. The highest figure was 81.1 % in poultry and 74.2 % in cereal specialized farms. The EU10/EU15 average ratio in labour productivity (SO/AWU) was only 25.8 % in 2016. The highest ratio goes to indoor horticulture specialized farms with 46.7 %, while in 6 farm types the EU10 average does not reach 26 % of the EU15 average. In cereal specialized farms there are 4 CEECs with labour productivity above EU15 average, in dairy farms there are only 2, in fruits and outdoor horticulture only one each. It is a real challenge for the EU10 countries to speed up area productivity in order to become more competitive.

**Conclusions**

- 1) Extending specialization has been an effective path for EU10 agriculture production development for catching up leading to an overall growth in production of 98 % between 2005 and 2016.
- 2) Among all specializations in the EU10, cereals, dairy and poultry specialized farms had the highest share in production (40.3 %, 22.3 % and 15.1 % respectively) in 2016, while the three fastest growing specialized farms were cattle rearing and fattening (69.5 %), cereals (59.8 %) and fruits (11.9 %).

- 3) In 2016, in 7 out of the EU10 countries cereals specialized farms were leading production. In Estonia and Poland dairy farms, while in Slovenia cattle rearing and fattening specialized farms had the highest share.
- 4) An increase of production of the specialized farms was a general phenomenon in all EU10 countries with Latvia (230.9 %), Bulgaria (157.1 %), Lithuania and Slovakia (148-148 %) in the front of the pack.
- 5) In 7 out of EU10 countries cattle rearing and fattening specialized farms reached the fastest growth in production, in Estonia fruits farms, and in the Czech Republic and Slovenia cereals farms taking the lead.
- 6) The outstanding growth of production of specialized farms in EU10 was fuelled by a high increase of area productivity and an even higher one in labour productivity against non-specialized farms.

### Suggestion

Specialization should continue to characterize the EU10 agriculture in its effort to catch up with the EU15 countries. In particular, specializing in cereals, cattle rearing and fattening, dairy, fruits and poultry farming coupled with increased productivity should serve as main drivers.

### Bibliography

1. *Agriculture, Forestry and Fishery in Statistics 2018 Edition (2018)*. Retrieved: <https://ec.europa.eu/eurostat/documents/3217494/9455154/KS-FK-18-001-EN-N.pdf/a9ddd7db-c40c-48c9-8ed5-a8a90f4faa3f>. Access:12.03.2020.
2. Baun, M., Kouba, K., & Marek, D. (2009). Evaluating the Effects of the EU Common Agriculture Policy in a New Member State: The Case of the Czech Republic. *Journal of Contemporary European Studies*, 17(2), pp. 271-292.
3. CAP Reform. (2003). Retrieved: <http://www.oecd.org/tad/32039793.pdf>. Access:12.03.2018.
4. Csaki, C., – Jambor, A. (2018). Konvergencia vagy divergencia? Merre tart Kelet-Közép-Európa és a FAK mezőgazdasága? (Convergence or Divergence? Where to Heading Agriculture of CEECs and CIS?). Budapest. *Közgazdasági Szemle. LXV. évf., 2018. October*. pp. 1048–1066.
5. Csaki, C.,–Forgács, C. (2008). Smallholders and Changing Markets: Observations on Regional Level. *Society and Economy. Vol. 30, number 1. June*. pp. 5-28.
6. Davidova, S. (2014). Small and Semi-Subsistence Farms in the EU: Significance and Development Path. *EuroChoices. Vol. 13, number 1*. pp. 5-8.
7. Davidova, S., and Bailey, A. (2014). Roles of Small and Semi-subsistence Farms in the EU. *EuroChoices. Vol. 13, number 1*. pp. 10-13.
8. DG Agriculture (2016). Research for Agri Committee – Structural Change in EU Farming: How Can the CAP Support 21st Century European Model of Agriculture? Retrieved: [http://www.europarl.europa.eu/RegData/etudes/STUD/2016/573428/IPOL\\_STU\(2016\)573428\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2016/573428/IPOL_STU(2016)573428_EN.pdf) Access: 12.03.2018.
9. Dwyer, J. (2014). CAP Reform Proposals for Small and Semi-Subsistence Farms. *EuroChoices. Vol. 13. number 1*. pp. 31-34.
10. Erjavec, E., - Falkowski, J.,- Juvancic, L. (2014). Structural Change and Agricultural Policy for SSFs: A View from the 2004 NMSs. *EuroChoices. Vol. 13, number 1*. pp. 41-44.
11. EP Resolution (2014). *Motion for A European Parliament Resolution on the Future of Small Agricultural Holdings*. Retrieved: <http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&mode=XML&reference=A7-2014-0029&language=EN#title2>. Access: 14.03.2018.
12. EUROSTAT (2016). *Small and Large Farms in the EU - Statistics from the Farm Structure Survey*. pp.19. Retrieved: [http://ec.europa.eu/eurostat/statisticsexplained/index.php/Small\\_and\\_large\\_farms\\_in\\_the\\_EU\\_-\\_statistics\\_from\\_the\\_farm\\_structure\\_survey](http://ec.europa.eu/eurostat/statisticsexplained/index.php/Small_and_large_farms_in_the_EU_-_statistics_from_the_farm_structure_survey). Access:12.03.2016.
13. EUROSTAT (2018). *Small and Large Farms in the EU - Statistics from the Farm Structure Survey*. pp. 18. Retrieved: <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/54736.pdf>. Access: 11.03.2020.
14. Forgács, C. (2002). The Challenge of Integrating CEECs' Agriculture into the EU. *Presidential Address. Xth Congress of EAAE. Zaragoza. August*.
15. Forgács, C. (2016). Is Specialization a Way for Small Farms to Adjust in CEE (EU-10). *Economic Science for Rural Development 2016*. Jelgava. April 21-22. Proceedings. No 42. pp. 221-227.
16. Forgács, C. (2017). Growth and Productivity Advantages of Specialized Farms in Central and Eastern European Countries in 2005-2013 (2017). *Acta Aeoconomia. 2017.1*. ISSN 1644-0757. ISSN 2450-4602. pp. 13-23.

17. Forgacs, C. (2019). Main Drivers of Central and Eastern European Countries' Agriculture in 2005-2013: Specialization and Land Concentration. *Proceedings of the 2019 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 50* Jelgava, LLU ESAF, 9-10 May 2019, pp. 320-327 DOI: 10.22616/ESRD.2019.040
18. Gordon, M., - Salvioni, C., and Hubbard, C. (2014). Semi-subsistence Farms and Alternative Food Supply Chains. *EuroChoices. Vol. 13, number 1.* pp. 15-18.
19. Rabinowitz, E. (2014). Farm size: Why Should we care? *EuroChoices. Vol. 13. number 1.* pp. 28-29.
20. Tangermann, S. (1994). West looks East. *European Review of Agricultural Economics* 21. pp. 375-392.

## **FINANCE AND TAXES**

## ARCHITECTONICS OF FINANCING OF AGRICULTURAL ENTERPRISES IN UKRAINE

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**Abstract.** Agriculture is one of the most important types of economic activity for the Ukrainian economy, since together with other related economic activities it forms more than half of Ukraine's GDP and the share of agriculture in the production of goods and services tends to increase. In such conditions, an important and urgent task is a retrospective study of the architectonics of financing of agricultural enterprises in Ukraine, the factors influencing it and the substantiation of the prospects for its optimization. The aim of the study is the empirical assessment of the formation of architectonics of financing of agricultural enterprises in Ukraine under the influence of macroeconomic factors and industry factors. For the empirical assessment of the architectonics of financing of agricultural enterprises of Ukraine, a system of absolute and relative indicators, regression and correlation analysis were applied.

An empirical assessment of the financial support of agricultural enterprises in Ukraine in the context of agricultural development allowed to distinguish three periods: 2010-2013 – an increase of financial resources of agricultural enterprises in Ukraine subject to excess of equity, ensuring of financial stability of enterprises; 2014-2015 – reduction of financial resources of agricultural enterprises subject to excess borrowed funds, partial loss of financial stability of enterprises; 2016-2018 – an increase of financial resources of agricultural enterprises in the direction of restoring the potential of financial stability and a deterioration in the payment discipline of the resources of agricultural enterprises.

**Key words:** agricultural enterprises, agriculture of Ukraine, financial resources, architectonics of financing.

**JEL code:** C82, G32, Q14

### Introduction

The purpose of the article is the empirical assessment of the formation of architectonics of financing of agricultural enterprises in Ukraine under the influence of macroeconomic factors and industry factors.

The main objectives of the research are: disclosure of scientific approaches to the formation of financial resources of agricultural enterprises of Ukraine; determination of the dynamics and structure of financing of agricultural enterprises in Ukraine.

Information sources: scientific articles and monographs on the financial support of agricultural enterprises of Ukraine, data from the State Statistics Service of Ukraine, National Bank of Ukraine.

Agriculture is one of the most important types of economic activity for the Ukrainian economy, since together with other related economic activities (processing industry, trade) it forms more than half of Ukraine's GDP. The share of agriculture in the production of goods and services in 2018 amounted to 10.85 % compared to 9.42 % in 2013, 7.55 % in 2010. The social and economic role of agriculture in Ukraine is enhanced by the following factors: ensuring of food security of the state, rural development, rural employment, as well as "foreign exchange earnings from the export sale of agricultural products, which directly affect the national currency rate" (Katan, L., 2019) and, accordingly, the balance of payments of the state. In such conditions, an important task of ensuring the sustainable development of agriculture is the financing of agricultural enterprises in compliance with both the principles of sufficiency and financial stability. Therefore, an important and urgent task is a retrospective study of the architectonics of financing of agricultural enterprises in Ukraine, the factors influencing it and the substantiation of the prospects for its optimization.

For the empirical assessment of the architectonics of financing of agricultural enterprises of Ukraine, a system of absolute and relative indicators (to determine the dynamics and structure of

financing of agricultural enterprises of Ukraine), a regression analysis (to construct regression equations for the total amount of financing of agricultural enterprises of Ukraine during the study period (2005-2018), a correlation analysis (to determine the degree of connection between the dynamics of financing of agricultural enterprises and other indicators in agriculture) were applied.

### **Research results and discussion**

The issues of financial support of agricultural enterprises in Ukraine are covered in numerous research papers of scientists. In particular, P. Stetsiuk investigated the problems of building an effective system for agricultural enterprises' financial resources management in the conditions of market transformation of the economy (Stetsiuk, P., 2008); O. Gudz determined the priority areas for the formation and efficient use of financial resources in the direction of improving the credit support of agricultural enterprises (Gudz, O., 2007); N. Davydenko determined the attraction of financial resources by agricultural corporations through access to foreign stock exchanges (Davydenko, N., 2012); N. Trusova investigated the financing of agricultural enterprises and developed the model of an integrated system of financial potential for proportional distribution, free handling of own and attracted financial resources of agricultural enterprises, forecasting of financial results in a short-term and long-term time sections (Trusova, N., 2015); B. Batiuk and N. Radukh (2015) proved the need to diversify the financial resources of agricultural enterprises (Batiuk, B. and Radukh, N., 2015); S. Bojnec, S. Kvasha and O. Oliynyk analysed features of agriculture in Slovenia and Ukraine in terms of their farm organizational structures, their farm size structures and evolution in association with development of an efficient financial system for multifunctional roles of agriculture and for rural development (Bojnec, S., Kvasha, S. and Oliynyk, O, 2014).

A. Yanchuk, Ie. Markova and P. Voronzhak are convinced that the problem of financing of agricultural enterprises of Ukraine should be solved through instruments of financial-credit mechanism of state regulation such as subventions, grants, budget investments and budget lending (Yanchuk, A. O., Markova, Ie. Yu. and Voronzhak, P. V., 2017).

The financial resources of agricultural enterprises of Ukraine in the study period (2005-2018) increased by 6.5 times (Figure 1), which exceeds the growth rate of the total financial resources of enterprises in the economy (2.9 times) and in all other types of economic activity (transport, storage, postal and courier service – 3.4 times, industry – 2.9 times, building – 2.6 times, retailing and wholesaling – 2.6 times, financial and insurance activities – 1.8 times etc.).

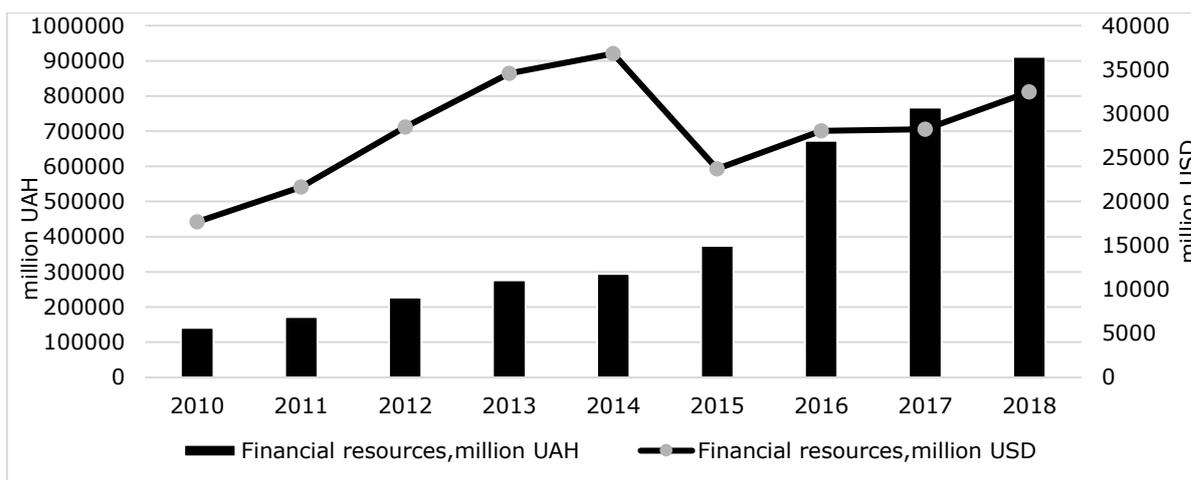
The growth of the nominal size of financial resources in hryvnia equivalent ( $TFR_{UAH}$ ) allows us to distinguish two substantive periods: the first period (2010-2015), when there was a constant accumulation of financial resources of agricultural enterprises (Formulae 1,  $R^2 = 0.98$ ):

$$TFR_{UAH;2010-2015} = 45098 t + 89781 \quad (1)$$

The main factors that contributed to the accumulation of financial resources in agriculture and had a close direct correlation with their dynamics were: an output of products and services at market prices ( $r = 0.95$ ), the gross yield of major crops (for example, sunflower, cereals and grain legumes), livestock production (milk, eggs, meat). At the same time, crop yields and average agricultural prices were increasing.

The second period lasted from 2016 to 2018. During this period there was an accumulation of financial resources of agricultural enterprises (Formulae 2,  $R^2 = 0.99$ ) due to the increase in the output of goods and services at market prices ( $r = 1.00$ ), which was a consequence of the increase, first of all, in the average prices of products of both crop and livestock production:

$$TFR_{UAH;2016-2018} = 119542 t - 544599 \quad (2)$$



Source: author's calculations based on the State Statistics Service of Ukraine

Fig. 1. Financial resources of agricultural enterprises of Ukraine, 2010-2018

The instability of the national currency in the long term and fluctuations in the hryvnia exchange rate to foreign currencies make relevant the assessment of the dynamics of financial resources of Ukraine's agricultural enterprises in dollar terms, but the approach to periodization requires some adjustments: the first (2010-2013) is a steady increase in financing of agricultural enterprises of Ukraine; the second (2014) – a sharp reduction in the financing of agricultural enterprises of Ukraine in dollar terms due to the devaluation of hryvnia; the third (2015-2018) – gradual restoration of capitalization of agriculture. However, in particular some authors call the current state of financing of agricultural enterprises of Ukraine as well as "The condition of the limited financial resources of a large number of business entities in the agrarian sector of the Ukrainian economy" (Pohrishchuk, G. B. and Melnyk, V. I., 2017).

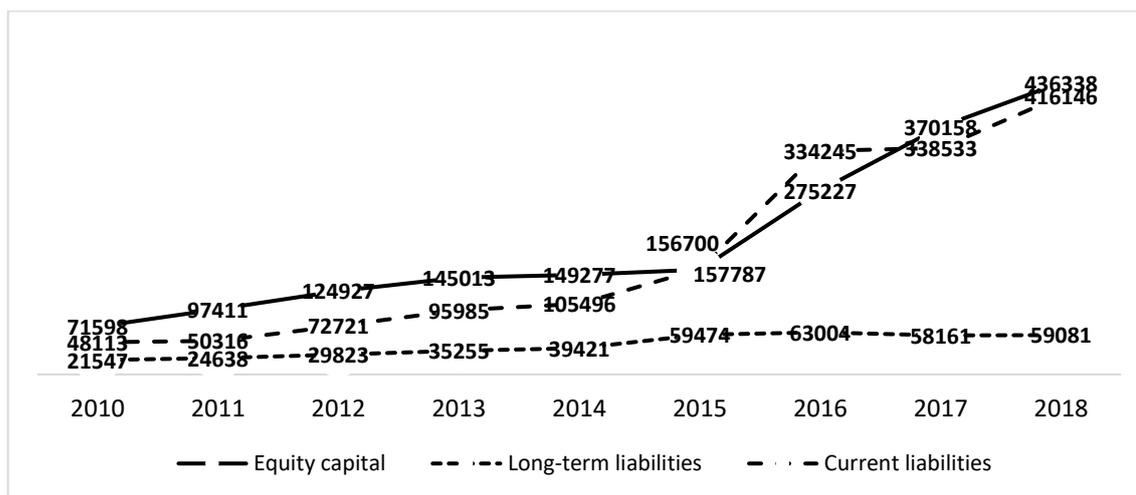
The architectonics of financing of agricultural enterprises in Ukraine is determined by the composition and structure of financial resources with the determination of the share of equity, long-term and current liabilities (figure 2, table 1).

Table 1

**The structure of financing resources of agricultural enterprises of Ukraine, 2010-2018 %**

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Equity capital</b>	50.69	56.51	54.92	52.47	50.73	41.90	40.92	48.27	47.86
<b>Borrowed capital, including</b>	49.31	43.49	45.08	47.53	49.27	58.10	59.08	51.73	52.14
<b>Long-term liabilities</b>	15.25	14.29	13.11	12.76	13.40	15.90	9.37	7.58	6.48
<b>Current liabilities</b>	34.06	29.19	31.97	34.77	35.88	42.20	49.71	44.15	45.65
<b>Total</b>	<b>100.00</b>								

Source: author's calculations based on the State Statistics Service of Ukraine



Source: author's calculations based on the State Statistics Service of Ukraine

Fig. 2. Financial resources of agricultural enterprises of Ukraine, 2010-2018, million UAH

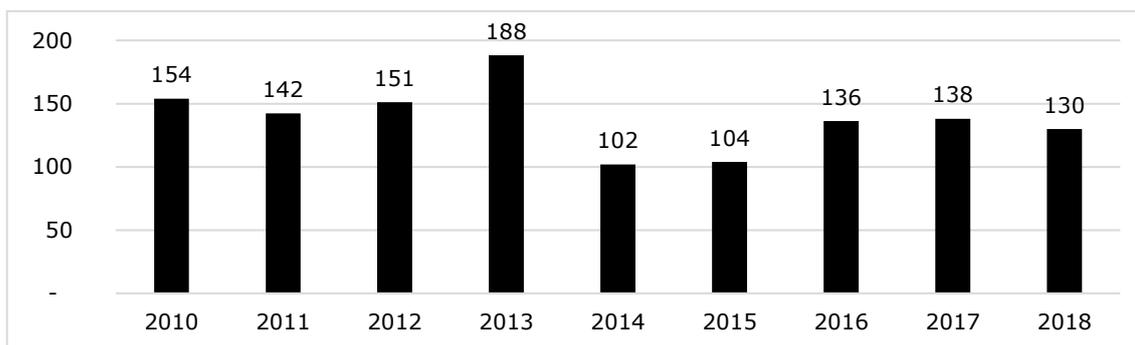
Equity capital was the basis for the accumulation of financial resources of agricultural enterprises. Equity capital's formation was possible due to such components as registered capital, additional paid-in capital, reserve capital, retained earnings (uncovered loss), unpaid and withdrawn capital. The dynamics of equity of agricultural enterprises indicates an annual increase in its nominal size, but its growth rate ranged from 2.94 % in 2014 to 75.64 % in 2016, which indicates the heterogeneity of the dynamics of equity, which is mainly determined by the dynamics of retained earnings. The smallest share of unprofitable enterprises in Ukraine in 2016 was observed in agriculture – 12.4 % of total amount of enterprises in the industry. However, this situation is explained by preferential tax treatment (single tax, in which an object enters the land for agricultural purposes and the availability of tax relief VAT) (Iatsukh, O. and Demchenko, I., 2018).

The calculated data on the correlation of the dynamics of equity and retained earnings with the net financial result of agricultural enterprises indicate a direct close relationship (the correlation coefficient in 2010-2018 was 0.82). Therefore, equity is the basis for the formation of financial resources of agricultural enterprises, which are replenished mainly due to the net profit of enterprises.

According to the calculated indicators of the structure of financial resources of agricultural enterprises of Ukraine in 2010-2014, equity capital prevailed (table 1). This fact meets the requirements of financial stability of enterprises. Since 2011, decreases in the share of equity and a partial loss of financial stability of agricultural enterprises have started. In 2015, the share of equity was less than 50 %. It should be noted that own funds of agricultural enterprises were insufficient to finance activities. Thus, the growth rate of equity was inferior to the growth rate of both long-term and current liabilities.

Current liabilities are the second priority element of the architectonics of financial resources of agricultural enterprises. Their formation occurred due to such components as short-term bank loans, accounts payable for goods, work, services and for settlements with employees, budget and social insurance funds, as well as current collateral and deferred income. Agricultural enterprises of Ukraine most often used accounts payable to finance current activities and current assets. A rapid increase in accounts payable, which began in 2011, indicates deterioration in the solvency of agricultural enterprises and violation of their payment discipline until 2013 (Figure 3). In 2014, the state of payment discipline of agricultural enterprises improved and the average repayment period in the

industry was reduced almost by half (from 188 days in 2013 to 102 days in 2014). In 2016-2017, the payment discipline of agricultural enterprises was deteriorated and in 2018 it was stabilized.



Source: author's calculations based on the State Statistics Service of Ukraine

Fig. 3. Payables payable period by agricultural enterprises of Ukraine, 2010-2018, days

According to the table 1, long-term liabilities – the third priority element of the architectonics of financial resources of agricultural enterprises, which combines long-term bank loans, long-term bonds of enterprises, targeted financing from state and local budgets and others. Long-term liabilities were the smallest part among others in the structure of sources for accumulation of financial resources of agricultural enterprises. The main reasons for the lack or insufficient demand of agricultural enterprises for “long money” are the insufficient development of the Ukrainian stock market, and the low level of creditworthiness of some agricultural enterprises. The decrease in the share of long-term liabilities by 2.5 times in 2016-2018 is of particular importance.

The main obstacles of agricultural lending development in Ukraine are on the supply-side, on the commercial banks, which are facing the lack of specialized risk assessment tools to be used in evaluating business strategies and loan applications of farms. Most of commercial banks due to the lack of understanding of the specificities of agricultural production and the inability to adequately assess the risks associated with farming activities and farmers, they resort to higher interest rates, which in turn lead to a reduction in the demand-side for loans by farms (Bojniec, S., Kvasha, S. and Oliynyk, O, 2014).

Based on six features, we will periodize the features of the architectonics of financing of agricultural enterprises in Ukraine in the long term (table 2).

Table 2

**Periodization of financing of agricultural enterprises of Ukraine, 2010-2018**

Periods	Features					
	Total amount, million US dollars	The share of equity capital	Long-term liabilities	Current liabilities	Payables payable period	Financial stability
<b>The first period (2010-2013)</b>	growth	more than 50 %, decrease	13-15 %, decrease	30 -35 %, Absence of single tendency	142-188 days, increase	Normal
<b>The second period (2014-2015)</b>	decrease	42-51%, decrease	13-15 %, increase	36-42%, increase	102-104 days	Normal
<b>The third period (2016-2018)</b>	growth	less than 50 %, increase	6-9 %, decrease	44-50 %, decrease	130-136, decrease	Unstable financial position

Source: author's calculations based on the State Statistics Service of Ukraine

## Conclusions, proposals, recommendations

- 1) The empirical assessment of the financial support of the activities of agricultural enterprises of Ukraine in the context of agricultural development was carried out, and three periods were distinguished: 2010-2013 – an increase in the financial resources of agricultural enterprises in Ukraine subject to the predominance of equity, ensuring of the financial stability of enterprises, the violated state of payment discipline; 2014-2015 – reduction of financial resources of agricultural enterprises subject to the prevalence of borrowed funds, partial loss of financial stability of enterprises; 2016-2018 – an increase in the financial resources of agricultural enterprises in the direction of restoring the financial potential of the first period, partial loss of financial stability and a deterioration in the payment discipline of the resources of agricultural enterprises.
- 2) The architectonics of financial resources of agricultural enterprises of Ukraine indicates the presence of structural changes that are manifested in a decrease in the potential of agricultural enterprises in the long term.
- 3) Conducting the study gives grounds to propose approaches to optimizing the structure of financial resources of agricultural enterprises in Ukraine with the determination of the priority of equity capital and long-term liabilities.

## Bibliography

1. *Agriculture, Forestry and Fishery* (2010-2018). Retrieved: <http://www.ukrstat.gov.ua>. Access: 15.01.2020.
2. Batiuk, B. (2015). *Efektivnist Finansovoho Zabezpechennia Silskohospodarskykh Pidpriemstv: Teoriia, Metodyka, Praktyka* (Efficiency of Financial Support of Agricultural Enterprises: Theory, Methodology, Practice). Spolom, Lviv, p. 89.
3. Bojnec, S., Kvasha, S., Oliyuk, O. (2014). Agricultural Financial Systems in Slovenia and Ukraine. *Bulgarian Journal of Agricultural Science*, No. 20. pp. 458-468.
4. Davydenko, N. (2012). *Perevahy Zaluchennia Finansovykh Resursiv Ahrarnymy Korporatsiiamy Shliakhom Vykhotu Na Inozemni Fondovi Birzhi* (Advantages of Attracting Financial Resources by Agrarian Corporations Through Entry into Foreign Stock Exchanges). *Oblik I Finansy APK*, No. 3. pp. 96-101.
5. *GDP Production and Distribution by Types of Economic Activity* (2010-2018). Retrieved: <http://www.ukrstat.gov.ua>. Access: 15.01.2020.
6. Gudzyk, O. (2007). *Finansovi Resursy Silskohospodarskykh Predpriyatii* (Financial Resources of Agricultural Enterprises). NNTS IAE, Kyiv, p. 452.
7. Iatsukh, O., Demchenko, I. (2018). The Problem of Unprofitable Activity of Enterprises in Ukraine. *Baltic Journal of Economic Studies*, Volume 4, No. 2, pp. 64-69.
8. Katan, L. (2019). *Osoblyvosti Ta Problem Finansovoho Zabezpechennia Diialnosti Silskohospodarskykh Pidpriemstv* (Peculiarities and Problems of Financial Support of Activity of Agricultural Enterprises). *Ekonomika APK*, No. 6., pp. 124-126.
9. *Monetary and Finance Statistics* (2010-2018). Retrieved: <http://www.ukrstat.gov.ua>. Access: 15.01.2020.
10. *Official Exchange Rates* (2010-2018). Retrieved: [bank.gov.ua/markets/exchangerates?date=2020-02-01&period=daily](http://bank.gov.ua/markets/exchangerates?date=2020-02-01&period=daily). Access: 15.01.2020.
11. Pohrishchuk, G. B., Melnyk V. I., Pohrishchuk, G. B. (2017). Financial Supply of Innovation and Environmental Development Agrarian Sector. *Scientific bulletin of Polissia*, Volume 4, No. 1, pp. 219-224.
12. Stetsyuk, P. (2008). *Teoriia Ta Praktyka Upravlinnia Finansovymy Resursamy Silskohospodarskykh Pidpriemstv* (Theory and Practice of Financial Resources Management of Agricultural Enterprises). NNTS IAE, Kyiv, p. 260.
13. Trusova, N.V. (2015). *Formation of Financial Potential of Agricultural Enterprises*. Vydavnychi budynok Melitopolskoi miskoi drukarni, Melitopol, p. 118.
14. Yanchuk, A. O., Markova, Ie. Yu., Voronzhak, P. V. (2017). The Tools of the Financial-credit Mechanism of the State Regulation of the Development of Agricultural Production and Their Efficiency. *Scientific bulletin of Polissia*, Volume 3, No. 1, pp. 117-122.

## FINANCIAL SECURITY FOR THE AGRARIAN SECTOR OF UKRAINE

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**Abstract.** The agricultural sector of the economy is system-forming for Ukraine, guarantees the provision of food security of the state, forms the basis for the development of rural territories, influences environmental security, stimulates the development of other sectors of the economy. The level of financial security of the agrarian sector of the Ukrainian economy is caused by a number of factors, such as seasonal nature of production, limited shelf life of products, price disparity, low profitability, etc. Therefore, the purpose of the article is to analyze the development of the agro-industrial complex of Ukraine and the activities of the leading agroholdings of Ukraine, as well as to develop proposals for strengthening the financial security of the agricultural sector based on the results obtained. The goal of the study is based on a systematic approach and comparative economic analysis. The methodological basis is the general scientific methods and mechanisms for ensuring the financial security of enterprises.

The conducted research has made it possible to establish that in recent years the financial security of the agricultural sector in Ukraine is carried out mainly through a set of programs, each of which is aimed at improving production efficiency. Over the past five years, capital investment and credit in agriculture have increased significantly. The article substantiates the need to manage the financial security of agro-industrial enterprises at the present stage of socio-economic development of Ukraine. The practical significance of the obtained results is determined by the fact that the conclusions and proposals can be used in the formation of the financial security strategy of the agricultural sector and the development of a mechanism for its implementation.

**Key words:** financial providing, financial resources, financial security, agrarian sector.

**JEL code:** D23, Q13, Q14

### Introduction

The purpose of the article is to reveal the specifics of financial support for the agricultural industry, to conduct a systematic analysis of the positive and negative trends that further affect the efficiency of agricultural production, identify the main problems in this field and substantiate the directions of their solution in modern conditions.

The main tasks of the research are: disclosing of scientific approaches to determine the financial support of agricultural enterprises; analysis of financial performance of leading Ukrainian agricultural corporations; assessment of the dynamics of capital investment as one of the sources of financial security; comprehensive assessment of financial support for the agricultural sector of the economy.

Information sources: scientific articles available in international publications, annual financial reports of agricultural enterprises of Ukraine, official data of the National Academy of Agrarian Sciences of Ukraine and the State Statistics Service of Ukraine.

The methodological basis of the article is general scientific and special methods of research, in particular: economic and statistical - to evaluate the dynamics of financial support of the agricultural sector; analysis and synthesis - to find out the reasons that cause changes in the volume of financial security; tabular and graphical - to represent the results of the study; abstract-logical - in the implementation of theoretical and methodological generalizations.

Today agricultural sector of Ukraine is actually the main holder of the budget, and it provides far more than it receives. However, the development of agricultural production in the conditions of

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Ukraine's accession to the WTO and the intensification of globalization processes is impossible without improving its financing.

The only path for Ukraine to get rid of the role of the commodity country is to increase the added value in the agrarian sector thanks to the development of production capacities of processing products by national producers. High-tech, waste-free production should become the goal of the development in the domestic agrarian sector. It is estimated that the annual yield in Ukraine is within 50-60 million at an internal demand of 20 million tonnes of grain commodity prices, this is only USD 6 billion or 6 % of GDP. By increasing the added value through deeper processing by a factor of five, it is possible to get already USD 30 billion or + 30 % of GDP. This can also be achieved through a transparent and effective mechanism for allocating public subsidies to the agro-industrial complex. It is estimated that a five-fold increasing in value added in the Agro-industrial complex will result in the creation of 1 million new jobs, the multiplier effect will result in the fact that up to UAH 20 of additional GDP can be received for 1 hryvnia invested in the agro-industrial complex. That is due to investments of 1.5% to GDP will generate up to 30% of the gross additional product, but with a transparent mechanism of allocation of allocated resources and a system of control over their target using (Davydenko N., 2012).

### **Research results and discussion**

The formation of the financial support system for the agricultural sector of Ukraine is still ongoing. However, in the context of limited budget resources, instability of public policy in the field of financial support to entrepreneurship and stimulation of alternative forms of financing for agrarian business, lack of effective mechanisms of financial security, accompanied by high levels of financial risks, significant positive financial results and financial resources have not yet been achieved the sector.

The problems of financial support of the agricultural sector are now at the forefront of scientific interests and are reflected in the works of both foreign and domestic scientists. Thus, in particular I. V. Zyatkovsky under the term "financial security" means a system of sources and forms of financing the development of economic and social spheres of society, which is carried out in three forms: self-financing, crediting, budgetary allocations (Zyatkovsky, I., 2000). P. A. Stetsyuk is convinced that the problem of financial support at the micro level is not in the absence of financial resources at all, but in the access to them of a particular enterprise and the forms and methods of their distribution between the industries and economic entities (Stetsyuk, P., 2005).

According to some authors "... the meaning of the concept of" financial support of the enterprise "in a broader sense generalizes a set of measures and conditions that contribute to the sustainable development of the enterprise by covering the costs of the enterprise with financial resources, depending on the size of production and financial situation ..." (Dikan, L. and Holub, Yu., 2007). Accordingly, in the main emphasis in this definition is put on a set of measures and conditions by which it is possible to financially support the activity of the enterprise. O.E. Gudz regards financial security as an opportunity for an economic entity to provide its own activities with the necessary financial resources (Gudz, O., 2007). O. R. Zhydiak believes that when looking for ways to improve the model of rational organizational and economic mechanism of financial support for the activities of agricultural enterprises, it is necessary to take into account various principles: decentralization, compactness, intensity, reduction of intermediate links, dialectical interaction of self-regulation with state regulation, flexibility, flexibility and flexibility etc. (Zhydiak, O., 2013).

We believe that each of these definitions makes it possible to identify only a portion of the relationships and characteristics that are inherent in the financial support of a particular industry. Given the above, additional research needs financial support for the agricultural sector of the economy.

The financing could be at the expense of own, attracted and borrowed funds. The state supports agricultural sector with instruments of indirect methods, which allow to save financial resources in carrying out certain activities and allow to leave a part of profits which is taxed in other branches of economy.

Indirect methods include the procurement of food for state needs and agricultural products; debt restructuring, regulation of the production market, the establishment of marginal prices for certain types of agricultural enterprises of products, the protection of the economic interests of commodity producers in foreign economic activities in sphere of agro-industrial complex etc.

Increasing production capacity and positions in the consumer market, ensuring favourable organizational and economic conditions for the functioning of the agricultural sector, directing a conditionally direct form of state support through forms of mediation. It includes government procurement, foreign economic customs and tariff regulation, the creation of wholesale markets, the implementation of state programs, the provision of agricultural sector subjects with a machine-tractor park on lease or lease conditions, social support for the village and so forth.

Today, financial security of the agrarian sector in Ukraine is carried out mainly through a set of programs, each of which aims to increase the efficiency of production and profitability of the commodity producer. At the same time, due to the lack of funds of the State budget of Ukraine, this support is 80 % administrated at the expense of favorable tax policy, is an indirect form of subsidies to the industry (Shvab A., 2014 and Davydenko N. M., 2012).

Analyzing the State budget of Ukraine for 2017-2018, it can be argued that under the pressure of external and internal factors adopted by the state budget for 2017, a relatively new mechanism for supporting the Agro-industrial complex was formed. Which significantly limited the effect of indirect financing and regulated the annual volume of state budget funds for support of agricultural commodity producers of at least 1 % of production in the agro-industrial complex for 2017-2021.

Table 1

**Expenditure pattern of the Ministry of Agrarian Policy and foodstuffs of Ukraine for 2013 – 2018 UAH billion**

Indicators	Year						Deviation by %	
	2013	2014	2015	2016	2017	2018	2018 to 2013	2018 to 2017
Total cost	7.194	5.501	2.188	2.171	9.572	15.096	210.0	157.7
General Fund	4.175	3.359	1.613	1.691	5.565	12.769	306.0	229.5
Breakdown of costs in the state budget, %	58.0	61.1	73.7	77.9	58.1	84.6	145.9	145.6
Specific fund	3.018	2.142	0.511	0.498	4.006	2.327	77.1	58.09
Proportion of expenses in the state budget, %	1.78	1.28	0.37	0.32	1.20	1.97	110.67	164.17
machine costs, thousand Uah	3.613	2.637	0.526	0.596	5.820	7.763	214.86	133.38
Common Fund	1.669	1.487	0.450	0.504	2.360	6.659	398.98	282.16
Trust fund	1.944	1.150	0.076	0.092	3.461	1.105	56.84	31.93
Lending	0.623	0.021	0.381	0.087	0.842	0.952	152.81	113.06

Source: author's compiled according to the Law of Ukraine State budget for the corresponding year

The level of agricultural production in 2015 was taken as a basis and fixed at the level of 5 500 million UAH budgetary funds (Varnaliy S. S., Anzin R., 2015). This trend has been partly "inherited" by the 2018 state budget for 2018 for the Ministry of Agrarian Policy and Food, 12 456 million UAH was provided for expenditures, 94 % of which were planned to be financed from the General Fund (table 1).

In addition to the main financing, it is planned to allocate 952 million UAH credit funds on a returnable basis (without taking into account funds, during the year will be returned by economic entities), and as a whole direct expenditures in the State budget of 2018 for the Ministry of Agrarian Policy and Food reached 13.997 billion UAH, which is 22 % higher than the level of 2017 (Davydenko N., 2018). In the list of budgetary programs to maintain the development of the agrarian sector in 2018, other programs that were already in place, as well as a new one «Financial security for the development of farms» – was declared as the basis for the development of rural areas (table 2).

According to the data, in 2018, direct budgetary support for the agricultural sector was 4200 million UAH, Of which the following expenses are the most important are: - financial support of livestock – 2 400 million UAH (58 %), in particular, for partial reimbursement of the cost: construction and reconstruction of livestock farms and complexes and milking halls; purchased for the subsequent reproduction of bodies, netels, cows of native origin and tribal bodies, netels, cows of dairy, dairy and meat direction of productivity, breeding pigs and herds, breeding sheep; sheep, yrock; the reduction of interest on loans for construction, reconstruction of livestock farms and complexes and milecars.

Table 2

**Expenditures on budgetary programs of Ukrainian  
 AIC development 2013-2018, billion. UAH**

Program	Code	2015	2016	2017	2018	deviation by %	
						2018 to 2013	2018 to 2017
Financial assistance for this option to reduce the cost of credit	2801030	0.291	0.280	0.300	0.266	91.41	88.66
Financial support for the activities in AIC	2801180	-	-	0.060	0.005	-	8.33
Costs of agricultural fund	2801250	0.040	0.088	0.167	0.181	452.50	108.38
Horticultural support	2801350	-	-	0.075	0.400	-	533.3
Financial security for farm development	2801230	-	-	-	0.210	-	-
livestock promotion	2801450	0.040	0.030	0.170	2.401	6002.5	1412.35
Financial support to agricultural producers	2801580	-	-	4.774	0.695	-	14.56
Agricultural support(sum)		0.371	0.398	5.546	4.158	1120.75	74.97
Other activities(sum)		0.155	0.198	0.274	0.325	209.68	118.61
Scientific research	2801050	0.086	0.099	0.125	0.132	153.49	105.60
<b>Sum</b>	<b>2801000</b>	<b>0.526</b>	<b>0.596</b>	<b>5.820</b>	<b>4.483</b>	<b>852.28</b>	<b>77.03</b>

Source: author's compiled according to the Law of Ukraine State budget for the corresponding year

For 2018, the mechanism for partial compensation to enterprises in the agricultural sector of interest rates on bank loans has been preserved, but significantly below the levels of previous years - only 23 %. The expenses under the budget program "Expenses of Agrarian fund", connected with a set of measures on storage, transportation and export of objects of the state price regulation of the state intervention fund, in the amount of 52,2 million UAH. From a special fund, identical to the

budget for 2017, and under the budget program "Organization and regulation of the activities of institutions in the system of agro-industrial complex and ensuring the activities of "The Agrarian fund", the state budget expenditures in the amount of 128,4 million UAH are provided, including at the expense of the general fund – 86,4 million UAH.

For the purchase of seeds for the formation of the state reserve seed fund of financial support will be 5 thousand UAH at the expense of the special fund of the state budget.

Overall, there has been no positive growth in support of individual agricultural sector development programs, given that the percentage value of the total expenditure in 2017 is 0.7 %, in 2016 - 0.25 %, in 2015 – 0.3 %. And according to the legislation of Ukraine, the share of the state support expenses of the agrarian sector should be at least 5 % of the expenditure part of the State budget. The real amount of financing does not reach the declared indicators.

Most often, agricultural enterprises use bank credit as the fastest way to attract financial resources. However, high interest rates on the loan, short term of granting of the credit limit the use of this method by agrarian enterprises in the agrarian sector of the economy of Ukraine. For example, average interest rates on loans to agricultural enterprises ranged from 15.9 % in 2010 to 24-26 % in 2015, 17-22 % in 2017, and 17-24 % in 2018 (Official site of the National Academy of Agrarian Sciences of Ukraine, 2018).

Bank loans are the main source of small financial resources, mainly for current expenses, updating of production capacities, financing of working capital. The domestic banking system, due to the introduction of progressive credit mechanisms for agrarian enterprises, plays an important role in the continuity of the reproduction process and the development of entrepreneurial activity in the agrarian sector of Ukraine, precisely due to the scale of obtaining funds in comparison with self-financing.

The study found that today, only operational activities of agricultural enterprises are counted, but there is a scarcity of resources to meet their production needs. (table 3).

Table 3

**Dynamics of credit ensuring of agrarian sector in Ukraine economy, 2014-2018 years**

Rate	Years					deviation 2018 y. to 2017 y.
	2014	2015	2016	2017	2018	
The number of entities that attracted loans, units.	2267	2689	2801	3011	3041	30
Loans were given to the agricultural sector - total, billion UAH	10.9	23.4	31.5	40.3	43.5	3.2
Short -term	7.8	22.9	29	36.5	38.7	2.2
Mid-term	2	0.1	2.3	3.5	4.1	0.6
Long - term	1.1	0.4	0.2	0.3	0.7	0.4
Number of subjects that attracted preferential credits	-	439	347	382	403	21
Received concessional loans, million UAH	-	300	162.8	294.9	653.8	358.9

**Source: author's calculations based on Association of Ukrainian Banks: Official Internet page and Official site of the National Academy of Agrarian Sciences of Ukraine.**

Although loans to the agro-sector by domestic commercial banks increased from 55 billion to 68 billion by 2014-2018 UAH or 23.6%, its share in the loan portfolio of banking institutions remained almost unchanged, does not correspond to the existing potential of the agricultural sector of the country.

Analysis of the NBU data on loans provided by non-financial corporations to non-financial corporations on organizational and legal forms of economic activity and currencies (Table 4), indicates that bank lending to domestic farms is low.

Thus, the balance of credit funds to farms at the beginning of 2019 was 6 billion 976 million UAH, which is equivalent to only 0.8 % of total credit mass and 7.9 % of commercial banks loans granted to domestic enterprises. According to this indicator, farms were significantly inferior to domestic state, private and subsidiary enterprises. At the same time, 94 % of the credit balances of farms were in national currency and 6 % - in foreign currency.

Table 4

**Loans granted by deposit corporations (except the National Bank of Ukraine) to non-financial corporations, according to organizational and legal forms of management and currencies at the end of December 2018**  
*(balance of funds at the end of the period, UAH million)*

Organizational and legal forms of management	Sum	Among other things					
		In national currency	in foreign currency				
			Sum	including by currency			
				Dollar USA	Euro	russian ruble	other currencies
<b>Sum</b>	<b>859 740</b>	<b>464 023</b>	<b>395 717</b>	<b>325 552</b>	<b>69 606</b>	<b>486</b>	<b>73</b>
Enterprises	88 800	40 852	47 948	43 721	3 963	264	1
Citizen's associations of enterprises	62	50	12	12	-	-	-
Consumer cooperation	8	8	-	-	-	-	-
individual enterprises	3	3	-	-	-	-	-
family businesses	48	48	-	-	-	-	-
private enterprise	30 026	20 589	9 437	6 858	2 313	264	1
collective undertaking	63	52	11	5	6	-	-
State enterprises, including state-owned enterprises	40 260	5 931	34 329	33 751	578	-	-
state public utility enterprise	1 245	896	348	83	265	-	-
joint venture	604	563	40	40	-	-	-
foreign enterprises	848	447	401	34	367	-	-
leased enterprises	13	13	-	-	-	-	-
farm households	6 976	6 556	420	88	332	-	-
subsidiaries	8 645	5 695	2 950	2 848	102	-	-

Source: author's calculations based on Official site of the National Bank of Ukraine

Therefore, the experience of lending US households deserves attention. In the system of crediting of agrarian business, the leading place is occupied by The Farm credit system and the Agency of farmers' Services. In France, independent cooperative banking groups account for more than half of agricultural sector lending. Poland's experience points to a system of cooperative banks through which about 90 % of credits for the agricultural production, processing and trade in agricultural products pass. The system itself has a three-tier structure and consists of the main bank, credit unions and an extensive network of regional and local banks.

The using of this instrument of cooperation with the agricultural sector also demonstrates the high level of preferential lending. Preferential lending is that the farmer pays a certain amount of interest, and the other interest-rate differentials are returned by the state. In Poland, for example, the bank receives funds from the state and distributes them to its regional offices, and they distribute them to borrowers.

Overall, credit rates have now fallen and profitability in agriculture has fallen, but for many enterprises, credit remains an unaffordable tool for attracting external funds.

Investment is another source of financing for the agricultural sector. After a certain decline in 2014 (connected with the political crisis, military events in Ukraine and investors estimates of the expected risks from these events), the pace of investment of domestic agricultural enterprises began to recover. The volume of investments (table 5) shows that the agricultural sector is becoming more attractive for investors.

Table 5

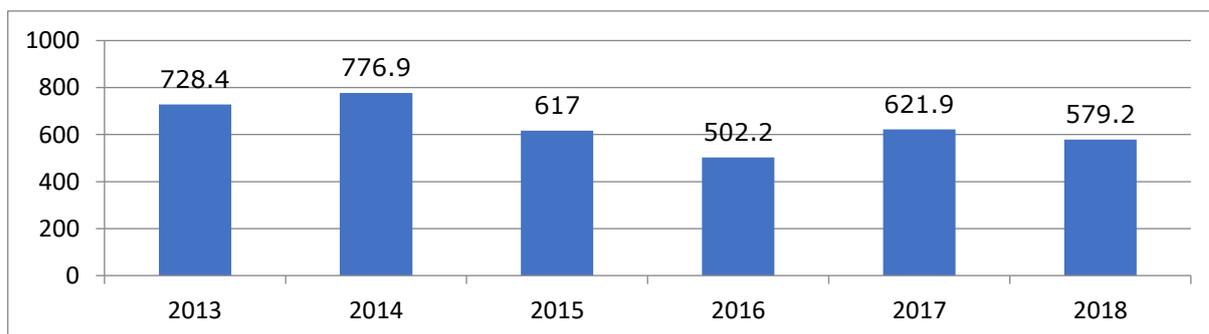
**Capital investment by economic activity in Ukraine, million UAH**

Indicators	2014	2015	2016	2017	2018	2018 to 2014, %
Total	219420	273116	359216	448462	526342	138.9
Including Agriculture, hunting and related services	18388	29310	49660	63401	64730	252.0
Rural, forest and fishery household	18796	30155	50484	64243	65901	250.6
Industry	86242	87656	117754	143300	179718	108.4
from it food production food, beverage and tobacco	13487	13548	21291	18927	19872	47.3
Other economic activities	40629	71081	89992	115000	134398	231.0
Construction	36057	43464	44444	52176	51902	43.9
Wholesale and retail trade; repair of vehicles and motorcycles	20716	20663	29957	33665	47597	129.8
Transport, warehousing, postal and courier activities	15948	18704	25107	37944	44921	181.7
Temporary accommodation and catering	1482	1393	1478	2134	1904	-28.5

Source: author's calculations based on the State Statistics Service of Ukraine

In Ukraine, capital expenditures in 2018 amounted to 526342 million UAH, that is 138.9 % more, than in 2014. Considering investments by individual types of economic activity, we see that the increase in the overall indicator is due to increased investments in agriculture, forestry and fisheries - by 250.6 % and industry - by 108.4 %, investments in transport, warehousing, postal and courier activities - by 181.7 %.

In case of shortage of funds at domestic agrarian enterprises, in our opinion, it is expedient to attract foreign capital into the agricultural sector. Thus, the dynamics of foreign direct investment in the agrarian sector of Ukraine is presented in Fig. 1.



Source: author's calculations based on the State Statistics Service of Ukraine

Fig. 1. Dynamics of foreign direct investment in the share capital of the agrarian sector of Ukraine, million dollars USA

The data show a downward trend of accumulated foreign direct investment in the complex. At the same time, the share of such investments in the total amount of foreign direct investment in Ukraine remains during 2013-2018. A Miniserina - 1.7 % of the total volume. The most direct foreign investment in the agricultural sector is directed to annual and two-year crops, livestock and agricultural support.

In other words, the state unfortunately failed to create conditions for foreign investment in the agricultural sector to contribute to the qualitative development of the industry. The analysis of the situation with foreign direct investment in agriculture of the country shows that foreign investors today are practically not interested in the long-term development of agricultural enterprises and the industry as a whole, preferring to get more return on the invested funds.

In order to be worthy and successful competitors, it is necessary not only to increase the scope of activity, production capacity, improve the quality of products, but also to manage capital, increase the value of enterprises and the market price of shares, market capitalization.

The increase in market capitalization of the enterprise causes additional interest among investors, which contributes to the inflow of financial resources, increase of the image of the enterprise, increase of the competitiveness of products; the increase in the value of the enterprise increases the improvement of shareholders by increasing the exchange rate value of shares; the increase of capitalization level allows the enterprise to enter the international stock market (Bagatskaya K., 2018).

Table 6 shows information about agro-industrial enterprises in the breakdown of world exchanges.

Table 6

**Indicators of Ukrainian agro-industrial enterprises listed on the world stock exchanges as of November 11, 2018**

Agro-based industries.	currency	Capitalization, mln dollars	Bid price	Selling price	Final price	Change from the beginning of the year
MHP	USD	1 297	12.10	12.30	12.15	5.7%
Kernel Holding	PLN	1 115	50.70	50.90	50.90	7.1%
Astarta-Kyiv	PLN	196	29.40	29.90	29.30	-43.1%
Ovostar Union	PLN	167	105.00	108.00	104.00	18.2%
Industrial Milk Company	PLN	111	12.15	12.45	12.50	0.2%
Avangard	USD	20	0.26	0.27	0.32	-11.1%
Agroton	PLN	20	3.42	3.49	3.40	-25.8%
Milkiland	PLN	7	0.61	0.75	0.80	-48.1%
KSG Agro	PLN	4	0.91	0.91	0.90	-55.2%
Ukrproduct	GBP	2	4.50	5.00	4.75	-5.0%

*Source: author's calculations based on the State Statistics Service of Ukraine*

Thus, two agroholdings of MHP have the largest market capitalization – 1297 million The amount of USD 1,115 million and Kernel USD 1,215 million Unlike most agro-industrial enterprises, they also have a positive increase in market capitalization since the beginning of the year.

## Conclusions

Conducting the study gives grounds to propose approaches to enhance financial security, in particular the introduction of effective financial management in the field of protection of the priority financial interests of the subjects of agrarian sphere, and in the management of its current activities; development and implementation of methodological support for financial security diagnostics with defined criteria, indicators and levels of its graduation; organization of constant monitoring of financial security; ensuring a high level of capitalization of agrarian business, including through the use of accounting and financial technologies that will help at the level of business entities to enhance financial security and increase investment attractiveness, and at the state level - to provide government statistics with reliable indicators of the activities of agricultural enterprises that will contribute to the effective implementation of agricultural, tax, customs and other policies.

## References

1. Agriculture of Ukraine. Statistical Collection for 2018 State Statistics Service of Ukraine (2018). Retrieved: <http://www.ukrstat.gov.ua> Access: 05.02.2020.
2. Association of Ukrainian Banks: Official Internet Page (2018)/ Retrieved: <http://www.aub.org.ua>. Access: 05.02.2020.
3. Bagatskaya, K. (2018). The Capitalization of Enterprises of Food Industry as a Factor of Increasing of Competitiveness of Products. Retrieved: [http://www.khntusg.com.ua/files/sbornik/vestnik\\_113/31.pdf](http://www.khntusg.com.ua/files/sbornik/vestnik_113/31.pdf). Access: 30.01.2020.
4. Davydenko, N.M. (2012). Assessment of Efficiency of Attraction of Financial Resources by Agrarian Corporations by Means of Access to Foreign Stock Exchanges and Their Influence on Financial Condition. Vinnitsa Center of Preparation of Scientific and Educational Methodical Editions of the KTEU. 1. p. 308 – 313.
5. Davydenko, N.M. (2012). Advantages of Attraction of Financial Resources by Agrarian Corporations by Entering Foreign Stock Exchanges. Volume 3. p. 96 – 101
6. Davydenko, N. (2018). The Financial Support of Agrarian Formations of Ukraine. Kiev 329 p.
7. Dikan, L.V. and Holub, Yu.O. (2007), Financial Support for the Enterprise: The Nature and Sources. *Ekonomika Rozytku*. Volume 3 (43), pp. 65–68.
8. Gudz, O.Ye. (2007). Provision of Farm Financial Resources in a Time of Change and Stabilization. *Ekonomika APK*, Volume 3, pp. 46–53.
9. IPO How Successful the Ukrainian Agro-Business in 10 Years (2019) Retrieved:<https://latifundist.com/infographics/view/60>. Access: 30.01.2020.
10. Materials of the Official Site of the National Bank of Ukraine (2019) Retrieved: <http://www.bank.gov.ua> Access: 27.01.2020.
11. Official Site of the National Academy of Agrarian Sciences of Ukraine (2018). Retrieved: <http://naas.gov.ua> Access: 27.01.2020.
12. Official Site of the National Bank of Ukraine. Loans and Deposits on Organizational and Legal Forms of Management (2018). Retrieved: [https://bank.gov.ua/control/uk/publish/article?art\\_id](https://bank.gov.ua/control/uk/publish/article?art_id) Access: 27.01.2020.
13. Shvab, A. (2014). The Agro Holdings With Assets in Ukraine on the World Stock Markets. *Finance and Taxation*. Volume 3 (65). p. 117 – 124.
14. Stetsyuk, P.A. (2005) Formation of Financial Resources of Agricultural Enterprises. *Ekonomika APK*. Volume 11, pp. 111–116.
15. Top-200 Agro-Enterprises: How Has the Land Bank of Agroholdings Changed in an Hour (2018). Retrieved: <https://delo.ua/business/top-200-ag>. Access: 27.01.2020.
16. Varnaliy, S. S., Anzin, R. (2015). The Current State and Dynamics of Public Placements of Domestic Companies' Shares in International Capital Markets. *Economic Analysis*. Volume 20. p. 114-122.
17. Zhydiak, O.R. (2013). The Problems of the Financial Mechanism of Agrarian Sphere Businesses. *Biznesinform*, Volume 2, pp. 139-141
18. Zyatkovsky, I.V. (2000), Financial Support of Enterprises. *Ekonomichna Dumka*. Ternopil. 215 p.

## ASSESSMENT OF THE FINANCIAL STABILITY LEVEL OF UKRAINIAN AGRARIAN CORPORATIONS

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**Abstract.** A necessary basis for the functioning, development and achievement of the goals of agricultural corporations in today's crisis environment is the providing of financial stability, the role of which is particularly growing in today's challenging environment. The regular changes of external and internal factors influencing the functioning of economic entities actualize the need to study the components of this category to ensure the ability of the enterprise to adapt while maintaining its integrity.

The purpose of the article is to substantiate theoretical provisions and develop recommendations for ensuring the adequacy and systematic process of evaluating the financial stability of agricultural corporations based on the analysis of financial ratios.

The object of the study is the process of assessing the financial stability of enterprises.

The methodological basis of the article is general scientific and special methods of research, which are based on modern scientific concepts of management, economic and related sciences. The following methods were used in the study: monographic (comparing and detailing the data of financial stability analysis of agrarian corporations); abstract-logical (used to formulate theoretical generalizations and conclusions).

Based on the works of scientists, it is established that the formation of financial stability of agricultural corporations should be based on a comprehensive study of the conditions for its provision, must take into account the features of financial development and the state of agricultural enterprises. A comprehensive study of such issues will solve the problem of financial stability on the basis of organizational support of its management system. The relevance of the assessment of the state of financial stability management in agricultural enterprises is determined, the holding of which is of particular importance due to the possibility of making managerial strategic decisions to improve the management of financial stability.

The article analyzes the financial stability of agricultural corporations. It is substantiated that the unstable financial condition of some agrarian corporations is a consequence of the lack of organization of management of specific subsystems of their economic activity. Throughout the life cycle, enterprises are accompanied by situations that may cause undesirable changes to their financial stability. Therefore, we consider it necessary to implement financial stability management at all stages of the company's life cycle by systematically monitoring the relevant ratios.

The practical significance of the results obtained is determined by the fact that conclusions and suggestions can be used for more objective decision-making, which based on the analysis of financial ratios, and in turn can be the basis for making optimal financial decisions. This material can be used to make strategic management decisions by agro-holding managers.

**Key words:** stability, financial stability, solvency, financial security, agrarian corporation.

**JEL code:** R14, E22, G21

### Introduction

The financial stability of an agricultural corporation is one of the most important characteristics of its financial potential. It is related to the level of dependence on creditors and investors and is characterized by the ratio of own and borrowed funds.

The issue of financial stability of an agrarian corporation in the face of modern challenges is extremely important, since financial stability is closely linked to the prospective solvency of the

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enterprise. Its analysis makes it possible to determine the financial opportunities of the company in the future.

Assessment of financial stability of an enterprise aims at an objective analysis of the size and structure of assets and liabilities of the enterprise and to determine on this basis the degree of financial stability and independence, as well as the compliance of financial and economic activity of the enterprise with the objectives of its statutory activity (Davydenko N., 2009).

Therefore, achieving a high level of financial stability is a strategic goal of the enterprise in the market, which requires the consolidation of all units and units of its management system. (T. Koritko and V. Dzerzhinskaya, 2008).

Enterprise financial management means the set of interconnected planning, organization, motivation and control processes that ensure the financial sustainability of an enterprise.

Pavlovska V., Prytulyak N. and Nevmerzhitska N. (2007) consider financial sustainability from the standpoint of an enterprise's ability to secure inventories and expenses at its own expense, to avoid unjustified receivables and payables, and to settle liabilities in a timely manner.

Vashchenko L. defines financial sustainability as one of the financial states of an enterprise, which becomes possible only in the presence of specific types, quantities and quality of resources, which are necessary and sufficient to achieve this goal (Vashchenko L., 2005).

The authors agree with O. Kuzmin's opinion that the financial sustainability of an agricultural enterprise is a qualitative characteristic of its financial condition and is characterized as the ability of the enterprise to function and develop effectively, is characterized by a sufficient level of management and financial resources, efficient management of them, which ensures its financial sustainability (Kuzmin O., 2011).

## **Research results and discussion**

The efficiency and rationality of management decisions depend on the degree of objectivity of the financial state. For effective management of the enterprise, it is important for management to objectively assess the state of the enterprise in a market environment and on this basis, determine the directions and goals of long-term purposes.

The results of the financial analysis can be used by a wide range of users, in particular analysts, investors, banks, creditors, experts on reliability of investments, managers.

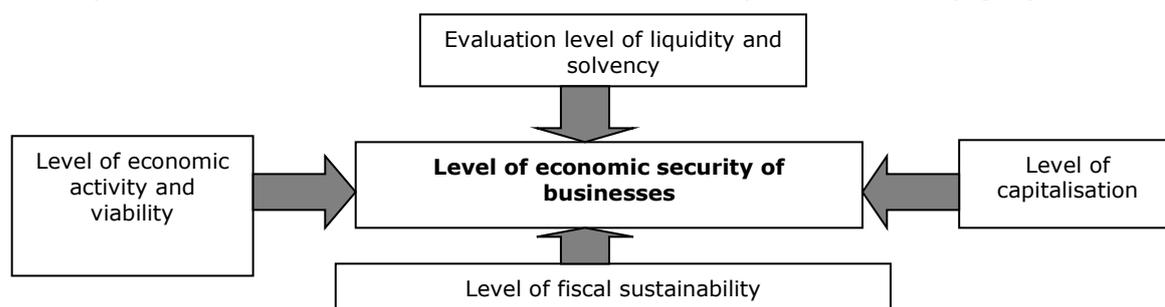
At the present stage of development, the scientific theory of management has become even more relevant. It is, above all, characterized by the complexity of the functions and principles that reveal the content of the management process. Financial analysis permeates all management functions and plays an important role in bringing the financial management system into line with the complex tasks of production management. Its results use both informational and reference material when basing and making management decisions. Now in economic theory and in practice, there are several different methodological recommendations on a wide range of indicators that allow to assess the financial state of the enterprise. However, these methods vary in their essence only by the number of indicators used for the analysis and the ways in which they are grouped.

The assessment of the financial state within the context of financial security should be consistent with the following grounds:

- comprehensiveness - the existence of as wide a range of aspects as possible to be considered in measuring the level of financial security. Microenvironment is a complex of integrated system, where the order of formation of financial result is influenced by many factors, which are clearly

formalized, and subjective. In our view, drawing attention first of all to the financial side of the safe state of operation in the enterprise as an indicator of the state of its development, it is also necessary to clearly define the list of essential features and conditions of economic activity, inherent in the industry as a whole and specifically, the enterprise;

- clarity - the need for a clear interpretation of the results of the assessment of the financial security in the enterprise. The analysis carried out should clearly define the state of development efficiency, financial stability, the viability of insolvency and the overall prospects of subject. Taking into account the different level of training of the user and the provided information, the procedure of presenting the subject to the appropriate level of financial security should be accessible for understanding;
- urgency – is obtained from the terms of the current socio-economic formation of the country. Fiscal policy reforms, the instability of the national banking system and the volatility of solid-climatic factors are the primary cause of the difficult conditions for the management of agrarian subjects. Financial security information should be appropriate and appropriate to the specific temporary and spatial conditions of the activity. In addition, it should be noted that the assessment of the level of financial security should be based on the current achievements of scientific thought;
- veracity and simplicity of computation. Financial security assessments should be based on official financial accountability and should be targeted at a wide range of users. In our opinion, taking into account the above indications to the result of the assessment of the financial security of the enterprise, the latter should be built as a result of the analysis of elements (Fig. 1).



**Source: authors' construction**

**Fig. 1. Evaluation the constituent elements of the financial security of the enterprise**

The authors believe that the financial security of the enterprise is an effective result of equivalent components: indicators of financial condition, financial stability and the level of its capitalization.

To ensure the sustainability of the enterprise, it is necessary to ensure sustainable economic growth, which is the ability of an entity to increase production and sales of production, while increasing the efficiency of use of available resources and reducing the impact of external factors on the conditions and parameters of the activity in accordance with the principles of performance. In turn, sustainable economic growth should also be determined by a set of factors and conditions under which these factors will contribute to the achievement of the enterprise's goals for sustainable economic development (Davydenko N., 2006).

The assessment of the financial stability of the enterprise aims at an objective analysis of the size and structure of the assets and liabilities of the enterprise and to determine on this basis the degree of financial stability and independence, as well as the conformity of financial and economic activity of the enterprise with the objectives of its statutory activity.

According to Blank I., financial stability assessment allows "identify the level of financial risk associated with the structure of sources of formation of the enterprise's capital and accordingly the degree of its financial stability in the process of future development." (Blank I., 2004). That is, financial stability is estimated on the basis of the ratio of own and attracted sources of assets formation of the enterprise, the rate of equity growth due to the economic activity of the enterprise, the ratio of long-term and current liabilities, sufficient provision of working capital by own sources.

Thus, the indicators of financial stability assessment reflect the ratio of varieties of financial resources of the enterprise with each other and to their total value, the degree of mobility of use etc. To assess the financial sustainability of agrarian entities, the authors propose to use solvency ratios, autonomy, financing, equity capital manoeuvrability, and equity ratio.

Thus, the coefficient of autonomy shows the share of own and equivalent financial resources in the total capital of the agricultural entity and characterizes the degree of its independence from the borrowed capital (Table 1).

As higher the value of this ratio, as more financially sound, stable and more independent from external creditors the enterprise is. The recommended value of the coefficient of autonomy is 0.5 (50 %). Accordingly, the total amount of capital must be at least half formed at the expense of the enterprise's own funds, the solvency ratio should be at least 0.5. Thus, in 2006 - 2018, the highest rates were observed in Agroton (0.89), Industrial Dairy Company (0.61), Kernel - Trade (0.53). Mironovsky Bakery (0.41), Avangard (0.07) and Ukrproduct (0.07) were below the recommended values. This indicates a critically low share of equity in the total amount of advanced capital, which makes enterprises financially unsustainable and dependent on borrowed funds.

Table 1

### Dynamics of solvency ratio change (autonomy)

Companies	Solvencyratio (autonomy)												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kernel-trade	<b>0.05</b>	-0.01	0.003	0.02	0.02	0.62	0.56	0.57	0.54	0.61	0.66	0.57	0.53
Agroton	<b>0.53</b>	0.55	0.29	0.44	0.84	0.66	0.67	0.65	0.45	0.66	0.87	0.87	0.89
Raise-Agro	<b>0.2</b>	0.32	0.08	0.08	0.08	0.06	0.03	0.20	0.04	0.03	0.05	0.04	0.06
Myronivsky bakery	0.43	<b>0.42</b>	<b>0.35</b>	<b>0.38</b>	<b>0.55</b>	0.48	0.48	0.45	0.41	0.32	0.33	0.43	0.41
Astarta Kyiv	0.52	<b>0.57</b>	<b>0.34</b>	<b>0.51</b>	<b>0.59</b>	0.54	0.53	0.55	0.43	0.49	0.61	0.65	0.50
Industrial dairy company	0.19	<b>0.55</b>	<b>0.44</b>	<b>0.51</b>	<b>0.8</b>	0.77	0.52	0.42	0.14	0.32	0.41	0.57	0.61
Avangard	0.11	0.13	0.12	0.43	0.49	0.71	0.73	0.76	0.60	0.35	0.24	0.15	0.07
Ukrproduct	0.59	0.68	0.71	0.80	0.75	0.62	0.57	0.55	0.43	0.27	0.16	0.14	0.07

Source: compiled by the authors on the basis of the financial statements of agricultural holdings

The coefficient opposite to the coefficient of financial autonomy is ratio of financing, the critical value of which is 1. The coefficient of financing shows which part of the activity of the enterprise is financed at the expense of own funds, and which at the expense of the debt (Table 2).

Table 2

### Dynamics of the coefficient of financing change

Companies	Coefficient of financing												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kernel-trade	<b>-19.47</b>	<b>-130.6</b>	<b>116.47</b>	<b>110.71</b>	<b>97.51</b>	1.69	1.30	1.32	1.16	1.55	1.94	1.35	1.13
Agroton	<b>0.89</b>	<b>0.82</b>	<b>2.48</b>	<b>1.24</b>	<b>0.18</b>	1.99	2.09	1.85	0.83	1.93	6.59	6.78	7.98
Raise-Agro	<b>13.93</b>	<b>12.14</b>	<b>12.05</b>	<b>11.99</b>	<b>11.22</b>	7.16	4.13	0.24	0.04	0.03	0.06	0.06	0.06
Myronivsky bakery	<b>0.29</b>	<b>0.46</b>	<b>1.88</b>	<b>1.63</b>	<b>1.51</b>	0.93	0.91	0.82	0.70	0.48	0.50	0.76	0.7
Astarta Kyiv	<b>0.93</b>	<b>0.74</b>	<b>1.93</b>	<b>0.95</b>	<b>0.67</b>	1.18	1.12	1.21	0.77	0.96	1.60	1.87	1.02
Industrial dairy company	0.21	0.83	1.15	0.88	0.29	0.77	0.52	0.73	0.16	0.46	0.70	1.36	1.55
Avangard	5.71	6.44	7.61	1.34	2.39	2.52	2.79	3.72	1.58	0.57	0.33	0.18	0.07
Ukrproduct	0.27	0.36	0.41	0.25	0.33	3.07	1.64	1.34	1.22	0.75	0.37	0.07	0.16

Source: compiled by the authors on the basis of the financial statements of agricultural holdings

Thus, according to Table 2, the values of the Kernel-Trade, Agroton, Astarta-Kiev and Industrial Dairy companies' financing ratios are higher, which is indicative of an unstable financial position and high financial dependence on external creditors and investors. The rest of the analysed companies have values lower than 1, that is, the lowest amount of liabilities per UAH 1 of own funds.

The normative value of the ratio of the security of own working capital is 0.1 and above. High value indicates the financial stability of the corporation and the ability to carry out active activities even in the absence of access to borrowed funds and external sources of financing of the company. Conversely, a value below the standard indicates a significant financial dependence of the enterprise on external creditors (Table 3).

Table 3

### Dynamics of change in the ratio of the provision of own working capital

Companies	Ratio of the provision of own working capital												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kernel-trade	0.51	0.72	1.97	0.34	0.37	0.26	0.16	0.06	-0.02	0.13	0.29	0.24	0.14
Agroton	0.44	0.45	0.15	0.32	3.91	0.51	0.16	0.39	0.15	0.55	0.84	0.84	0.86
Raise-Agro	-0.12	0.15	0.09	0.30	-0.37	-0.57	-0.70	-1.58	-0.69	-0.35	0.04	0.03	0.04
Myronivsky bakery	0.60	0.31	0.34	0.46	0.65	-0.3	-0.29	-0.37	-0.84	-0.90	-0.68	-0.61	-0.52
Astarta Kyiv	0.80	0.51	-0.05	1.21	1.52	0.18	0.20	0.12	-0.20	-0.05	0.25	0.30	-0.05
Industrial dairy company	<b>0.80</b>	<b>0.28</b>	<b>-0.004</b>	<b>0.13</b>	<b>2.40</b>	0.50	-0.01	-0.12	-0.54	-0.42	-0.07	0.17	0.36
Avangard	<b>-0.18</b>	<b>-0.49</b>	<b>-0.23</b>	<b>0.12</b>	<b>0.26</b>	0.42	0.30	0.31	-0.01	-1.08	-1.75	-1.68	-2.17
Ukrproduct	<b>0.73</b>	<b>0.82</b>	<b>0.84</b>	<b>1.62</b>	<b>1.43</b>	0.07	-0.03	-0.10	-0.39	-1.45	-1.27	-1.00	-0.80

Source: compiled by the authors on the basis of the financial statements of agricultural holdings

According to the Table 3, Kernel-Trade, Agroton and Industrial Dairy Company are best provided with their own turnaround businesses, and worst of all: Myronovsky Bakery, Astarta-Kyiv, Avangrad and Ukrproduct.

Equity manoeuvrability ratio shows which part of the equity is in circulation( i.e. in a form that allows these funds to be freely manoeuvred) and which is capitalized. This indicator characterizes the portion of the entity's equity that is the source of coverage of its current assets. To ensure flexibility in the use of the enterprise's own resources, it is necessary that the equity manoeuvrability ratio is positive and high (Table 4).

Table 4

**Dynamic of equity manoeuvrability ratio change**

Companies	Equity manoeuvrability ratio												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kernel-trade	-7.04	-76.11	75.23	40.12	54.77	0.40	0.54	0.28	0.27	0.22	0.35	0.71	0.62
Agroton	0.52	0.67	0.40	0.37	0.62	0.92	0.47	0.76	0.92	1.10	0.93	0.93	0.78
Raise-Agro	-0.36	0.35	0.67	-2.84	-3.20			-2.09	0.01	0.63	2.83		
Myronivsky bakery	0.43	0.21	0.26	0.32	0.27	0.54	0.44	0.62	0.32	0.54	0.64	0.66	0.65
Astarta Kyiv	0.60	0.30	-0.08	0.50	0.55	0.60	0.72	0.45	0.35	0.09	0.50	0.40	0.17
Industrial dairy company	0.92	0.16	-0.003	0.08	0.28	0.46	0.37	0.19	0.65	0.26	0.78	0.45	0.51
Avangard	-1.84	-2.07	-1.32	0.13	0.16	0.53	0.34	0.33	0.13	0.40	0.69	-2.65	-8.65
Ukrproduct	0.16	0.21	0.29	0.36	0.36	0.29	0.27	0.25	0.29	-0.42	-2.49	0.39	-0.03

**Source: compiled by the authors on the basis of the financial statements of agricultural holdings**

The positive dynamics of this indicator is observed in Kernel-Trade, Agroton, Myronivsky Bakery, Astarta-Kyiv, Industrial Dairy Company. Equity manoeuvrability ratio showed positive dynamics in Avangard and Ukrproduct in 2008 – 2013; however, it fell significantly in 2014-2018, which clearly indicates a high deficit of working capital, resulting in a manoeuvrability factor in equity total value.

Thus, according to the results of the conducted analysis, it should be noted that the activity of agrarian corporations in Ukraine is unstable, despite the improvement of some indicators in 2011-2013. An unstable financial position causes disruption in the balance of payments, although the ability to restore the balance in payment means and payment obligations is retained by attracting temporarily free sources of funds: not expired unpaid wage arrears, unpaid tax payments arrears, unpaid social security debts, unpaid debt on payments with suppliers, etc. However, since the capital in stocks is long enough and the maturities of these liabilities are short, investing in long-term assets causes considerable financial difficulties for the analysed agricultural corporations.

**Conclusions**

The financial sustainability of agrarian corporations should be considered as a complex category, reflecting the level of financial condition and financial results of the corporation, the ability to fulfil its obligations and to ensure the development of activities while maintaining creditworthiness and solvency. The condition of the enterprise's viability and the basis for its development in a competitive market is stability. The financial stability of the enterprise is a prerequisite for its economic development.

The results of the study of the state and dynamics of financial stability of agrarian corporations showed that during 2008-2011 and 2016-2018 there was a change in the capital structure towards an increase in the share of equity, which indicates an increase in the level of financial stability.

The largest share of borrowed capital is external capital, which accounts for a large portion of payables, which is reduced in aggregate capital as a result of the increase in the share of own financing, and the share of borrowed capital is slightly higher than its other short-term sources, primarily of a financial nature.

In order to overcome the financial instability of the studied agricultural corporations and strengthen the competitiveness, it is advisable to use a comprehensive approach to improving financial management, whose main focus is in the short term - elimination of insolvency in case of loss of competitive advantages; in the medium term - elimination of causes that generate insolvency and adaptation to the conditions of activity in a competitive environment; in the long term - ensuring the financial stability of the agricultural corporation to the influence of external factors of the competitive environment.

## References

1. Blank I.A. (2004). Management of Financial Security of the Enterprise. - Kiev. p.84.
2. Davidenko N. M. (2009). Financial Sustainability of Agrarian Enterprise. Topical Problems of Economic Development of the Region: Scientific Collection of Carpathian National University. Vasily Stefanik. No. V. T.2. P.112.
3. Davidenko N. M. (2006). Financial Sustainability of Enterprises and Its Analysis. Scientific Bulletin of NAU. 2006. No.97. Pp.183-187.
4. Koritko T. Yu., Dzerzhinskaya V.N. (2008). Monitoring of financial stability of the enterprise taking into account its life cycle. Bulletin of the Donbass State Machine-Building Academy: Coll. Sciences. wash. No. 3 (13). Pp. 131 - 134.
5. Kostyrko, L.A., Kostyrko, R.O., Madiarova, E.S., Sereda O.O. (2018). Complex Analysis of Investment Attractiveness of Enterprises in the Context of Financial Provision of Enterprises Development. Financial and Credit Activity: Problems of Theory and Practice, No 2 (25), pp. 198-207.
6. Kuzmin A.E. (2011). Financial Stability and Profitability as Factors of Formation of Transfer Potential of Innovative Development of the Enterprise. Bulletin of the NBU Banking University. No. 2 (11). Pp. 96 - 103.
7. Pavlovskaya V.O., Prytulyak N. M., Nevmerzhitskaya N.Y. (2007). Financial Analysis. Kiev. p. 211.
8. Vashchenko, L.O. (2005). Information and Methodological Support for the Analysis of the Financial State of Enterprises. State Academy of Statistics, Accounting and Auditing of the State Statistics Committee of Ukraine, p. 8.

## MODERNIZATION OF THE MECHANISM FOR FINANCING RURAL DEVELOPMENT IN UKRAINE

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**Abstract.** Rural areas occupy the major part of the territory of Ukraine, but they are characterized by low levels of socio-economic development, limitations in the amount and quality of public services, negative demographic trends. The aim of the article is to systematize modern means of financing rural development in Ukraine and to identify problems of their application by local governments. The authors proposed to improve the mechanism for financing rural development by active use its budgetary, credit and investment instruments. The prevalence of budgetary funding, whose limitation constrained rural development, was proven. Modern approaches to financing rural development were stated based on broadening community involvement in local budgeting, as well as in attracting investment resources.

It has been found out that government subventions are the most powerful support instrument for rural development in the spheres of infrastructure, education, health care etc. The possibilities of financing rural development through the development budgets under financial decentralization have been investigated. It was noted that the use of participatory budgeting and other forms of project finance most clearly demonstrated real democratic transformations in local finance in Ukraine. The proposals for the use of PPP agreements, crowdfunding, and international funds' grant programs for financing rural development were provided.

**Key words:** rural development, financing, local budgets, project budgeting, borrowings.

**JEL code:** H72, R51

### Introduction

Rural development issues are relevant to most countries, as urban settlements typically make up only a small part of their territory. In Ukraine, rural areas occupy 90% of the country's territory, with almost a third of the country's population living there. They are territories with dominant agricultural activities which guarantee food security for the state and have considerable natural, economic, historical and cultural potential. Therefore, it is extremely important to enable conditions for their sustainable development, which, above all, includes sufficient and stable funding.

The problem of financing rural development has long been kept under review by scientists. However, some authors boil it down to lending or microfinancing to agricultural producers (Drabenstott and Morris, 1989; Shobande, 2018) or to the means of their government support (Abramova, 2018), which is a narrow approach. Bydyk (2013) and Storonianska and Pelekhatyi (2014) are much broader in identifying sources and methods of such funding, offering their own vision of conceptual approaches to the creation of the rural development financing mechanism. The point of view of those scholars who link the issues of rural development with the improvement of the functioning of territorial communities, the effectiveness of local governments (Kravchenko, 2015), the decentralization processes (Sutiyo and Maharjan, 2017; Dubnevych et al., 2019), and with the corresponding growing of budgetary and extra-budgetary resources and the use of new funding methods (Singh, 2009; Fock and Wong, 2008; Dorosh et al., 2019) is the most promising for us.

Therefore, the aim of the article is to systematize modern means of financing rural development in Ukraine and to identify problems of their application by local governments. The financial aspects of agricultural enterprises' and farming development along with their impact on rural development

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are beyond the scope of the study. The tasks of the study are: to find out the possibilities of financing rural development at the expense of local budgets in the context of financial decentralization in Ukraine; to identify areas for public initiative in financing rural development; to propose the ways for more active use of lending and investment instruments. The research hypothesis is based on the awareness of the need to improve methods and implement innovative financing tools for rural development. The systematic analysis and comparative-legal methods were used to research the modernization of the mechanism for financing rural development. The structural-functional method was used to study budget financing technologies. Comparative analysis was applied to determine the national specificity of rural development financing. The mechanism for financing rural development has been further developed in the article by systematizing its budgetary, credit and investment instruments. This made it possible, firstly, to prove the prevalence of budgetary funding, whose limitation constrained rural development; secondly, to open up modern approaches to financing rural development based on broadening community involvement in local budget formation and use, as well as in attracting credit and investment resources.

### **Research results and discussion**

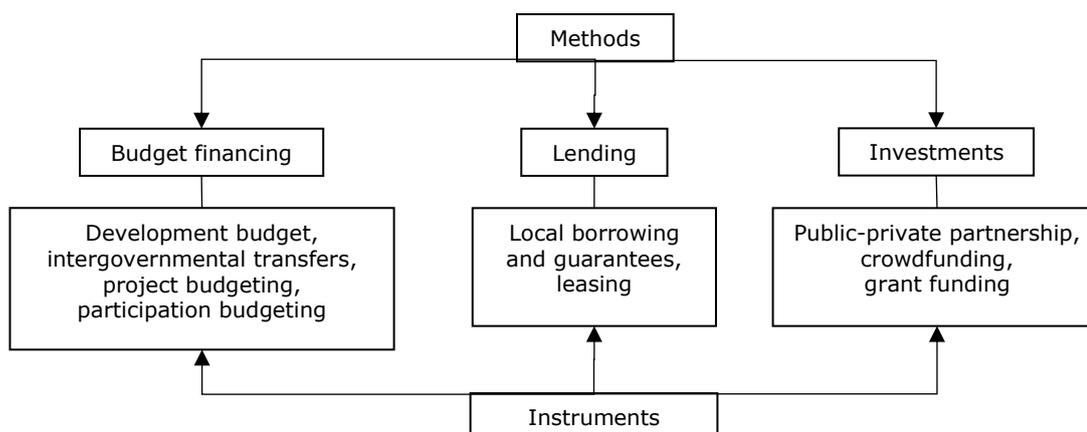
Nowadays the Ukrainian agriculture is developing dynamically. In the period 2010-2018, agricultural production increased by 43.7%; in 2018 agricultural, forestry and fishery production made up 10% of GDP (State Statistics Service ..., 2020), and agricultural products formed more than 40% of the national exports of goods (National Bank of Ukraine, 2020). However, despite these positive economic results, the situation in rural areas in Ukraine is generally characterized by low quality of life, depopulation processes, mono-functional use of labour, large-scale labour migration, higher unemployment rate compared to urban settlements (8.6% compared with 7.9%), the decay of social facilities, and the growing environmental challenges. As a result, the ability to meet the primary economic and social needs of the rural population is significantly narrowed, not to mention opportunities for personal development, complete recreation and other aspects of extended reproduction of labour potential. This situation is due to the fact that for a long time rural areas were considered only as a spatial basis for the development of agriculture. Asymmetry of regional development in Ukraine, not only at the regional level, but also between urban and rural territories can, over time, pose a real threat to national security.

Consequently, socio-economic development of rural areas in Ukraine requires modernization of its financial support mechanism. The modern elements of this mechanism can be represented as following (Figure 1).

#### **1. Budget methods of financing and their improvement**

Financial decentralization, which began in Ukraine in 2014-2015, was aimed at achieving self-sufficiency of territorial communities, their ability to meet both current demands and, most importantly, sustainable growth needs. The key areas of financial decentralization were: the expansion of the local budgets' own revenue base, first of all, the budgets of newly created amalgamated territorial communities (ATC), the implementation of a new budgetary regulation mechanism with new types of intergovernmental transfers, the decentralization of spending powers. Considering that among 8.2 thousand local budgets operating in early 2020 in Ukraine, 7.8 thousand budgets are related to rural territories (district, ATC, settlement, village), it is possible to conclude with a high level of certainty that the tendency of strengthening their financial capacity also means increasing resources for rural development. Over the past five years, the own revenues of the general

fund of the local budgets have quadrupled and amounted to UAH 275.0 billion at the end of 2019 (Ministry of Finance ..., 2020).



**Source:** author's scheme

**Fig. 1. Methods and instruments for financing rural development in Ukraine**

Along with the general growth of local budget revenues, their development budgets are also increasing. Their funds are channelled to expanded reproduction, investment projects, construction and reconstruction of the socio-cultural facilities and utilities, infrastructure development, environmental protection etc. (Pelekhata, 2013). In 2015-2017, the development budgets increased fivefold, representing more than a quarter of local budgets' revenues (Budgetary monitoring, 2017). However, the composition of development budget's sources has changed: instead of its own stable revenues, now it can be formed at the expense of the budget's general fund. This allows local governments to determine the size of the development budget on their own, but does not exclude subjectivity in decision-making. Therefore, it is advisable to return to the practice of transferring local taxes and fees to the development budget, as well as to consider the possibility of transfer the share of income tax of enterprises registered in the relevant territory to it.

The aim of the financial decentralization is not only to increase financial resources of local governments, but also to increase the efficiency of use of budgetary funds, channelling them in particular to the rural development. From this point of view, it is worth analysing the experience of project financing at the level of local budgets in Poltava region. Since 2010, the Poltava Regional Council has been holding a regional competition for territorial community development projects. Its participants are village councils, settlement and small town councils, district and city councils, and ATC. Since 2015, the projects of inter-municipal cooperation of territorial communities have also taken part in this competition. Public utilities, in particular, solid waste management, health care, education, fire protection, and road repair, etc. were the areas for their implementation.

During the period of competition 400 projects out of almost 800 ones submitted by local self-government bodies to solve priority problems of sustainable local development have become winners. Over UAH 87.0 million has been assigned for their financing from the regional development budget, including UAH 46.4 million only in the last two years due to the significant increase in the number of submitted projects (Poltava Regional Council, 2020). Participation of local self-government bodies (not less than 50% of the project cost), as well as involvement of partner NGOs in financing are a prerequisite for submitting projects. The funds of the project of German Society for International Cooperation (GIZ) "Management Reform in the East of Ukraine" are also actively used for the implementation of projects. So, the regional competition contributes to the support of local initiatives

and the application of project approaches to the local budget spending, which increases their efficiency and effectiveness. The vast majority of projects are implemented in rural areas: for instance, in 2020, 40 projects out of 49 projects-winners will be carried out in villages or ATC.

The mechanism for financing rural development is now being transformed through the implementation of the concept of participatory budgeting. Global practice shows that development projects based on the direct involvement of the local inhabitants and aimed at meeting their needs are geared local priorities. Transparent allocations of budgetary resources, more complete satisfaction of the needs for public services, increase in efficiency of local self-governments are the results of such budgeting. The idea of participatory budgeting came to Ukraine in 2015, and it began to be implemented primarily in cities. Later on, some rural ATCs joined the process. In the beginning of 2020 more than thirty rural ATCs have joined the web service "Public Budget. E-democracy Platform" to post relevant information and vote online for development projects (Public Budget. E-democracy ..., 2020).

However, participatory budgeting can be extended to the regional level, as evidenced by the experience of the Poltava region. In 2017, the Poltava Regional Council launched the first in Ukraine and even in Europe program "Participatory Budget" extended to the whole region which was a leading one in the sphere of agriculture (Poltava Regional Council, 2020). Initially, UAH 6.354 million was envisaged from the regional budget for the implementation of the program for four years, but the amount was increased by three times in the last two years to a total of UAH 14.7 million (Table 1). The maximum cost of one project is UAH 100.0 thousand; funding is provided on a parity basis (50/50) with the relevant local council. The geography of projects is constantly expanding. In 2018, the winners (60 projects) represented 15 districts of Poltava region; in 2019 the winners (71 projects) represented 17 districts.

Table 1

**Implementation indicators of the regional program  
 "Participatory Budget of Poltava Region for 2017-2020"**

<b>Indicators</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Estimated amount of funds from the regional budget, thousand UAH	135	2 068	2073	2078	6354
Actual amount of funds from the regional budget, thousand UAH	135	2190	6190	6190	14705
Number of projects to vote	189	260	200	...	649
Number of winning projects	42	60	71	...	173

**Source: author's calculations based on (Poltava Regional Council, 2020)**

The improvement of participatory budgeting in the Poltava region continues. In 2019, the Poltava Regional Council initiated a school-based participatory budgeting. It is implemented within the program "Participatory Budget of Poltava Region for 2017-2020"; its total amount is UAH 1.0 million (up to 50.0 thousand UAH for each project). In 2019, 160 projects aimed at the development of education in the Poltava region, in particular, the implementation of the concept of the New Ukrainian School, were submitted. Almost 80 % of the projects were submitted by the schoolchildren from the villages and settlements so they aimed to solve the education problems in rural areas.

At the same time, it is clear that only at the expense of the own funds of the local budgets it is impossible to solve complex socio-economic problems of rural development. So, subventions from the state budget became one of the important instruments of its financing. Over the five years, the amount of local development subventions has increased by almost 55 times (Table 2). The main

condition for obtaining a subvention for socio-economic development is its use to create, increase or update the communal capital assets if the already approved construction projects are available.

Table 2

**Dynamics of government subsidies provided to local budgets for development purposes, UAH billion**

<b>Name of Subvention</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Subvention for socio-economic development of certain territories	0,5	0,8	3.3	6.2	5,0	4.7
Subvention for the formation of ATC infrastructure	-	-	1.0	1.5	1.9	2.1
Subvention for the development of medicine in rural areas	-	-	-	4.0	5.0	5.0
Subvention for the construction of sports facilities	-	-	-	0.27	0.37	0.75
Subvention for construction, reconstruction, repair and maintenance of public roads of local importance	-	-	-	-	11.5	14.7

**Source: authors' calculations based on (State Treasury Service..., 2020)**

However, experts estimate that there is no clear relationship between the level of development of the region, the total amount of subventions allocated and the amount of subvention per capita. In general, the distribution of such a subvention is disproportionate. The subvention for the formation of ATC infrastructure is distributed in proportion to the territory and the number of rural population in the ATC, with equal weights of both factors. This subvention is characterized by the objectivity and uniformity of its distribution, as well as a high level of funds' spending (almost 98 % in 2018). Except for project financing this subvention can be used to improve the quality of administrative services, to create modern management systems, to purchase vehicles, etc. Subvention for the development of medicine can be spent on new construction and reconstruction, purchase of medical equipment, development of telecommunication infrastructure of healthcare institutions.

The funds received by local budgets from the State Regional Development Fund, which is formed as part of the state budget, are one more source of project financing for rural development in terms of financial decentralization. The projects submitted by the local executive authorities and local self-governments must comply with one of three areas - strategic plans for the regional development, support for voluntary amalgamation of territorial communities and projects for cooperation of territorial communities. In recent years, the amount of these competitively allocated to local budgets funds has increased from UAH 2.9 billion in 2015 to UAH 7.67 billion in 2019 that is more than 2.5 times. Each year, the government approves funding for about 400 local development projects. But attention is constantly paid to the poor quality of the projects submitted for competition. It is important to develop and implement projects that have a multiplier effect, stimulate spatial development, create jobs, generate added value and be a source of future budget revenue (Decentralization, 2018).

**2. Credit and investment instruments of rural development financing**

Speaking about credit instruments of the mechanism for financing rural development we have to mention local borrowing which local governments are entitled to in accordance with the Budget Code of Ukraine. Also, they have the right to give guarantees to local enterprises. Local borrowing' funds are channelled into the development budget. In 2017-2019, about 70 local borrowings were made in Ukraine, mainly in the form of loans from international financial institutions and domestic banks (Ministry of Finance of Ukraine, 2020). However, only the city councils were the borrowers, their relevant right is clearly enshrined in Art. 16 of the Budget Code. With regard to ATCs, which have got broad budgetary powers through financial decentralization, the possibility of borrowing and

providing guarantees is stated only indirectly in Art.67 "Some features of local budgeting" (Budget Code of Ukraine, 2020). Thus, the lack of interest of ATC in attracting additional funds to the development budget through local borrowing is due not so much to economic feasibility as to legal uncertainty that impedes rural development financing.

Leasing, whose market is actively developing in Ukraine, is gradually becoming a powerful funding source for the economic development of rural areas. In 2016-2018, the total value of leasing agreements increased from UAH 9.8 billion to UAH 22.2 billion, with the main lessees being agricultural enterprises (National Commission for the State ..., 2020). Recently, the municipal enterprises have been entering the leasing market with the financial support of their founders - local governments, who are worried about renewing the fleet and equipment for the public utilities. However, we can't so far report about any decision taken by the ATC council to authorize a leasing contract for the company in which it is the founder, with the corresponding guarantee to the creditor. The reason is, on the one hand, in the aforementioned legislative uncertainty, and on the other hand, in the complexity and duration of the procedure of changing the legal status of municipal enterprises belonging to different local councils in the process of forming an ATC.

With budget constraints, local governments can also address rural development through the use of public-private partnership (PPP), which is a complex mechanism for combining efforts of public and private entities to optimize the creating and using infrastructure and public services provision. In Ukraine, the Law on Public-Private Partnership and the Law on Concession have created a sufficient legal framework for implementing the PPP, but this mechanism has not become widespread. At the beginning of 2020, 187 contracts have been concluded, of which only 52 contracts are being implemented (34 - concession contracts, 16 - joint activity contracts, 2 - other contracts), 135 contracts are not being implemented (among them 4 contracts expired, 18 contracts were terminated) (Ministry for Development of Economy ..., 2020). As a rule, the issues of local development - water supply and sanitation, alternative energy, household waste management etc. - are the subjects of the PPP agreements. Village councils are also among public partners. However, according to experts, the spread of PPP practices in Ukraine is constrained by both general economic problems and the weak awareness of territorial communities' management about PPP mechanisms, and the lack of relevant specialists.

Crowdfunding can be considered an innovative tool for financing rural development. Today, many web platforms are already operating in Ukraine to raise funds for different needs, so network crowdfunding technologies can be used to finance small rural development projects too. This technology greatly simplifies the fundraising process, with real "targeting" of resources. There are the first examples of the usage of such a financial instrument already: in 2017 - the "Kinderland" project of the Oleksiivka school of Zaporizhzhya region; in 2018, the schoolchildren of the Berezovka ATC of Odessa region raised funds for the roller rink's arrangement; NGO "Youth chooses life" raised funds for the implementation of the project "Creating an Art Space in the Village of Ivankivtsi" in Zhytomyr region; in 2019, the Chopovychy ATC in Zhytomyr region funded the project of creating a Youth Centre in the premises of a local cultural centre (Decentralization, 2020). At the same time, it is clear that in the face of social infrastructure decline, crowdfunding can't be the preferred method in solving social problems in rural areas.

## **Conclusions, proposals, recommendations**

- 1) The article presents the author's vision of systemizing modern means for financing rural development, as opposed to the mechanism of state support for the agricultural sector.
- 2) The analysis of the mechanism of financing rural development in Ukraine has confirmed the existence of significant discrepancies between theory and practice. This is evidenced, in particular, by the internal contradiction of the "Concept of Rural Development" (2015), where the following problems are identified: the unwillingness of territorial communities to initiate and participate projects; low efficiency of local self-government bodies; limited local budget resources to address rural development issues; low level of financial support of rural areas. However, activities specified in the document do not provide for their solution.
- 3) The possibilities of financing rural development at the expense of local budgets in the context of financial decentralization are found out by the example of Poltava region. The deepening of the decentralization process in Ukraine opens additional opportunities for increasing the financial capacity of territorial communities. The practice of the Poltava region illustrates the desire of local self-government bodies to use modern methods of financing rural development in accordance with present requirements. The experience of implementing from 2017 the participation budgeting program at the regional level is unique both in Ukraine and in Europe and can be recommended for active use in all regions of the country.
- 4) The areas for public initiative in financing rural development have been identified. The citizens' initiative arises within the framework of collaborative governance, which is to build a consensus between the rural community and local governments to improve public service delivery in such areas as infrastructure, health, education, communications, landscaping etc. Initiation and implementation of a budget public initiative depends on the intensity of the decentralization processes, the degree of public maturity and self-awareness of citizens, the level of Internet technologies' mastering.
- 5) The possibilities for more active use of lending and investment instruments are proposed. It is established that during the transitional period, and possibly for a longer time, a complex approach is needed - combining government subventions to regions with the enhance of their own financial capacity. It is necessary to activate the territorial community to find alternative sources of funding, to cooperate with international funds, programs, to receive grants etc. At the same time, the development of public-private partnership, a promising form of which for regional development is a concession, should be encouraged. Crowdfunding also becomes an innovative tool for financing rural development.

## **Bibliography**

1. Abramova, I. (2018). Status and Prospects of Financial Support for Rural Development. *Scientific Horizons*, 5(68), pp. 44-52.
2. Budgetary monitoring. Institute of Budget and Socio-Economic Research (2017). Retrieved: <https://www.ibser.org.ua/publications/monitoringcategories/shchomisyachnyy>. Access: 16.01.2020.
3. Budget Code of Ukraine (2020). Retrieved: <https://zakon.rada.gov.ua/laws/show/2456-17>. Access: 20.01.2020.
4. Bydyk, A. (2013). Theoretical Structure of the Financial Mechanism Providing the Development of Rural Areas. *Innovative Economy*, 3(41), pp. 156-162.
5. Concept of Rural Development : Decree of the Cabinet of Ministers of Ukraine No. 995-r of September 23, 2015. Retrieved: <https://zakon.rada.gov.ua/laws/show/995-2015-%D1%80>. Access: 28.02.2020.
6. Decentralization (2018). Retrieved: <https://decentralization.gov.ua/>. Access: 25.02.2020.
7. Dorosh, O., Dorosh, I., Fomenko, V., Dorosh, A., Saliuta, V. (2019). Assessment of the System of Allocation of Subventions and Subsidies and Their Impact on the Development of Rural Territories. *Scientific Papers*

Series Management, Economic Engineering in Agriculture and Rural Development, Volume 19, Issue 1, pp. 161-168.

8. Drabenstott, M., Morris, Ch. (1989). New Sources of Financing for Rural Development. *American Journal of Agricultural Economics*, Volume 71, No. 5, pp. 1315-1323.
9. Dubnevych Yu., Dubnevych N., Dorosh U. (2019). Social and Economic Development of Rural Areas under Conditions of Decentralization. *Agricultural economics*, Volume 10, Issue 1-2, pp. 24-31.
10. Fock, A., Wong, C. (2008). Financing Rural Development for a Harmonious Society in China: Recent Reforms in Public Finance and Their Prospects. World Bank Policy Research Working Paper 4693. 67 p. Retrieved: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1233069](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1233069). Access: 15.02.2020.
11. Kravchenko, T. (2015). Rural Development Based on Communities: Innovation of Public Policy in Ukraine. *Actual Problems of Public Administration*, 1(47), pp. 87-94.
12. Ministry for Development of Economy, Trade and Agriculture of Ukraine (2020). Retrieved: <https://www.me.gov.ua/Tags/DocumentsByTag?lang=uk-UA&id=cffc9f41-f2ef-45e6-8303-0f8fc0e368f0&tag=Derzhavno-privatnePartnerstvo>. Access: 06.02.2020.
13. Ministry of Finance of Ukraine (2020). Retrieved: <https://mof.gov.ua/uk/miscevij-borg-ta-miscevij-garantovanij-borg-osn-inf>. Access: 03.02.2020.
14. National Bank of Ukraine. Retrieved: <https://bank.gov.ua/statistic/sector-external/data-sector-external#1>. Access: 28.01.2020.
15. National Commission for the State Regulation of Financial Services Markets (2020). Retrieved: <https://www.nfp.gov.ua/ua/Ohliad-rynkiv.html>. Access: 05.02.2020.
16. Poltava Regional Council (2020). Retrieved: <https://oblrada-pl.gov.ua/>. Access: 31.01.2020.
17. Pelekhata, O.V. (2013). Budget of Development as a Tool of Rural Territorial Community in the Process of Implementation of Fiscal Policy for Economic Growth. *Socio-economic Problems of the Modern Period of Ukraine*, 6(104), pp. 355-361.
18. Public Budget. E-democracy Platform (2020). Retrieved: <https://budget.e-dem.in.ua/#/>. Access: 31.01.2020.
19. Shobande, O. (2018). Rural Financing for Economic Development in Africa: Context and Reality. *Annals of the University of Craiova: Economic Sciences Series*, 1, pp. 39-43.
20. Singh, K. (2009). Financing Rural Development (Rural Development: Principles, Policies and Management). SAGE Publications India Pvt Ltd, pp. 283-308.
21. State Statistics Service of Ukraine (2020). Retrieved: <http://www.ukrstat.gov.ua/>. Access: 17.02.2020.
22. State Treasury Service of Ukraine (2020). Retrieved: <https://www.treasury.gov.ua/ua>. Access: 11.01.2020.
23. Storonianska, I., Pelekhaty, A. (2014). Ways of Modernization of Financial Support for Territorial Communities' Development through Tasks of Administrative-Territorial Reform. *Finance of Ukraine*, 10, pp. 97-108.
24. Sutiyo, Maharjan, K. L. (2017). Decentralization and Rural Development in Indonesia. Springer Nature Singapore Pte Ltd. 162 p.

## PROTECTION OF EMPLOYEES IN INSOLVENCY PROCEEDINGS

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**Abstract.** When an enterprise becomes insolvent, it affects the partners (suppliers) of the company, the State and has a significant impact on the employees. The issue of the protection of workers' rights is one of the most important aspects in situations where the employer is declared insolvent. The country can develop its own employee protection system in case of company's insolvency. In this article, based on the statistical data for the period 2003 – 2019, the author analyses the situation in Latvia. The aim of the study is to analyse the existing employee protection mechanism in Latvia, which the State implements with the help of state entrepreneurial risk fee. Two ways of protecting the rights of employees or satisfying claims are distinguished: a privilege system and a guarantee system. Latvia chooses the guarantee system. In this article, based on the statistical data obtained, it is proved that the model chosen by Latvia is financially successful although creates a negligible burden for entrepreneurs, and its benefits are significant because, in line with the situation of Latvia, sufficient financial resources are accumulated each year and employees' claims are covered to a certain amount according to regulations in enactments, as well as the Income Tax and Mandatory State Social Insurance Contributions are paid from these requirements covered by the guarantee fund. The author considers that the State may act as an intermediary or insurer in the insolvency situations of an undertaking in order to protect employees and, in particular, the State budget from covering unforeseeable costs.

**Key words:** employee entitlement, employee's protection, insolvency, state fee.

**JEL code:** E24, G32, G38, H25, H71

### Introduction

The author examines the role of the state in protecting employees' interests in insolvency proceedings. By means of tax instruments such as the State fee, the State can act as an insurer, as an intermediary, to accrue funds to be paid to employees of insolvent companies in order to provide financial revenue for the work done from the insolvent employer and to reduce the potential burden on the State budget.

The aim of the study is to analyse the existing employee protection mechanism in Latvia, which the State implements with the help of state entrepreneurial risk fee.

The topic is actual because employers' insolvency affects the financial revenues of certain employees, the employer can no longer pay the salary earned in the event of insolvency, which further affects the fact that the person remains without work and financial resources. If the worker does not have sufficient financial resources, he/she is unable to provide oneself and thus is seeking State aid. Currently, there is also a kind of crisis situation due to THE COVID-19 virus, which will have a significant impact on the business environment at the author's discretion and can contribute to an increase in company insolvency claims over the foreseeable period of time. It is therefore important to assess whether the existing employee protection system justifies itself in the context of the employer's insolvency proceedings.

Based on the aim, the following research tasks were set: (1) to analyse the ways in which employees' claims are met; (2) to analyse the size of the state entrepreneurial risk fee and the amount of revenue in the State budget; (3) to collect and analyse the revenues and costs of the employee claims guarantee fund.

The following qualitative and quantitative methods were employed: the monographic method – in examining, assessing and analysing literature and legal enactments, selecting only the information

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related to the present research, describing findings and interpretations; statistical methods, i.e. statistical observation, compilation and grouping of information, calculation of statistical data, analysis of causal relationships and data generalisation; logical analysis and synthesis. The graphic method was employed to show the relationships identified and their nature and form. The logical construction method was used in analysing results and making judgements.

### **Research results and discussion**

When an enterprise terminates its activities using the instruments of insolvency proceedings, it affects not only the partners (suppliers) of the commercial company, the State, but has a significant impact on the projected financial revenues of each employee for the work done.

The issue of the protection of workers' rights is one of the most important cases where their employer is declared insolvent. In such a situation, the employer has not fulfilled his/her commitment to the employee – has not paid the remuneration and other payments due to the employee for the work done.

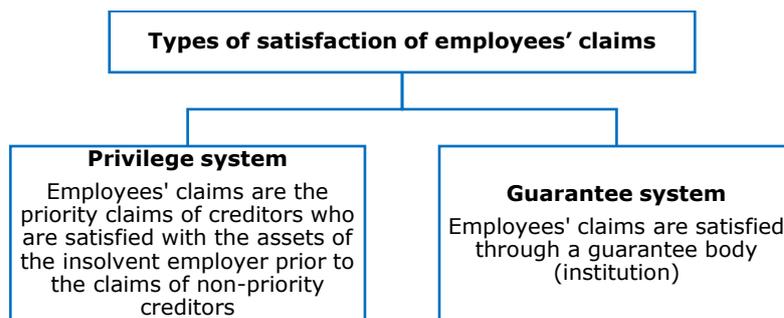
Mucciarelli (2017) indicates when an employer becomes insolvent, employees' claims for unpaid wages and contributions may be protected through statutory priorities, social security schemes, or a combination of both. Analysing social security schemes in France, Germany, and the United Kingdom, Mucciarelli concluded, while France protects employees through both a statutory priority and a social security scheme, Germany and the United Kingdom have progressively reduced employment protection over the last forty years. An important note is that a cumulative application of employee priorities and insurance schemes is not necessarily redundant. (Mucciarelli, 2017).

But not every country has developed special security for employees in insolvency cases. Juris Y. Karaleu indicates the guarantee funds which allow to fully or partially cover the debts to the employees do not exist in Belarus. In Belarus debtor's employees become one of the participants of the relations associated with the insolvency (Karaleu, 2016).

Christopher M. Hughes (2000) indicates that a series of well-publicized corporate collapses have focused the minds of policymakers, business representatives and academics on the problem of how best to protect the entitlements owed to employees of a failed enterprise. Australia analysed a number of options for creating financial support and protecting employees in the event of employer insolvency, among which was to create trust funds or compulsory insurance. Trust funds – was a straightforward model requiring employers to make monthly contributions to cover the full cost of all accrued entitlements. Compulsory insurance proposal was for superannuation funds to administer the service, funded by a 0.1 % increase to the Superannuation Guarantee Levy (old-age pension guarantee fee). Levies are payable by the employer, except in the case of small employers, whose contributions are to be made by the Government. The Employee Entitlement Support Scheme was formally selected as the preferred payment model. Insurance was rejected primarily because of the costs it would impose on business, especially on well-performing companies that already made adequate provisions for entitlements. The government did not want to make these firms subsidize poorly performing or unscrupulous employers (Hughes, 2000).

Two ways of protecting the rights of employees or satisfying claims are distinguished:

- 1) privilege system;
- 2) guarantee system (Budget and Finance (Taxation) Committee, 2000).



**Source: author's construction based on Budget and Finance (Taxation) Committee, 2000**

**Fig. 1. Types of satisfaction of employees' claims**

Until Latvia's accession to the EU, Latvia used a system of privileges to satisfy employees' claims in the event of insolvency, i.e. employees' claims have been identified as priority creditors' claims, which are satisfied with the assets of the insolvent employer prior to covering non-priority creditors' claims. One of the main shortcomings is the time period during which a worker can be paid and the situation of becoming vulnerable, especially at a time when there is a crisis, is not an opportunity to find a new job quickly in order to generate income.

With the guarantee system, the time period during which the employee receives the payment due to him is reduced. Within the framework of the guarantee system, the claims of employees are satisfied through the guarantee body, such as Insolvency Control Service (ICS), which ensures the employees' claims within a sufficiently short period of time, thereby ensuring the protection of employees in the event of insolvency of the employer in accordance with the procedures and to the extent specified in the regulatory enactments.

The EU, by Council Directive 80/987/EEC on the approximation of the laws of the Member States relating to the protection of employees in the event of insolvency of their employer, adopted on 20 October 1980, required EU Member States to provide for the protection of employees in the event of the insolvency of their employer, in particular in order to guarantee that their claims are satisfied in respect of remuneration. consideration of the need to balance economic and social development in the Community (Council Directive 80/987/EEC, 1980).

Latvia needed to introduce Council Directive 80/987/EEC at the time of accession. According to the Latvian National Programme for Integration, the time of implementation of the EU directive was set on 31 December 1999 and was one of the reasons why the Law "On Protection of Employees in case of Insolvency of Employer" was drafted (Annotation of Law "On Protection...", 2000).

Although the author of the draft law points out that the introduction of this law may have a negative impact on the development of the economy, as employers' costs are increased, which increases production costs and, consequently, possible exports and the competitiveness of goods in the external market (Budget and Finance (Taxation) Committee, 2000), the author considers that such a statement is not correct in addition, because the costs to the employer for ensuring protection in the employer's insolvency proceedings are small and do not significantly increase the cost of production (Table 1).

The Law "On Protection of Employees in case of Insolvency of Employer" entered into force on 1 January 2003 and, at this point, employers - companies, companies - are also obliged to pay the State entrepreneurial risk fee.

The author examined the regulatory framework and summarized the amount of the risk fee and the percentage of the fee to be paid to the employee claims guarantee fund (Table 1, Table 2).

Table 1

**State entrepreneurial risk fee amount in Latvia, 2003-2019**

Period, year	Amount of the risk fee during the reporting month for each employee, EUR	Chain growth rate, %
2003	1.07	-
2004	0.50	-53.3%
2005	0.50	0%
2006	0.36	-28.0%
2007-2019	0.36	0%

*Source: author's calculations based on Cabinet of Ministers Regulations, 2002-2018*

Latvia chose the model of setting up an employee guarantee fund in which the employer makes contributions and as shown in the figure, initially the amount of the fee was more than 1 EUR per employee (Table 1). In 2003, this levy was reduced by 53.3 % and, in view of the current situation and contributions to this fund, another reduction in the amount of the levy took place in 2006 - this time by 28 % and starting in 2007, the fee in Latvia amounts to 0.36 EUR, which has remained at this level until now.

Data for the share of the State entrepreneurial risk fee to be transferred to the employee claims guarantee fund in Latvia compiled in Table 2.

Table 2

**The share of the State entrepreneurial risk fee to be transferred to the employee claims guarantee fund in Latvia, 2003-2019**

Period, year	Amount to be transferred to the employee claims guarantee fund in % or EUR of the total amount of revenue from the State fee	Amount in EUR	Chain growth rate, %
2003	75 %	5 788 540.25	-
2004	52 %	2 471 975.50	-57.30 %
2005	43 %	1 889 881.56	-23.55 %
2006	86 194.73 €	86 194.73	-95.44 %
2007	303 467.25 €	303 467.25	252.07 %
2008	548 815.89 €	548 815.89	80.85 %
2009	53 %	832 062.86	51.61 %
2010	70 %-89 %	2 195 580.84	163.87 %
2011	78 %	2 195 284.89	-0.01 %
2012	82 %	2 368 407.12	7.89 %
2013	85 %	2 579 773.79	8.92 %
2014	89 %	2 726 824.80	5.70 %
2015	92 %	2 771 876.08	1.65 %
2016	96 %	2 807 069.08	1.27 %
2017	68 %-100 %	2 584 004.56	-7.95 %
2018	57 %	1 809 562.14	-29.97 %
2019	63.5 %	2 110 503.59	16.63 %

*Source: author's calculations based on Cabinet of Ministers Regulations, 2002-2018, and on the author's special request of the data from Insolvency Control Service*

The author concludes that at a time when the amount to be transferred to the employee claims guarantee fund was determined in % from collected fee, the contributions in an amount of EUR was

higher than in those periods, such as 2006-2008, when the amount of the contribution was determined as a special amount in EUR.

It is the duty to calculate the State entrepreneurial risk fee to any employer who may be declared into insolvency proceedings in accordance with the Law on Insolvency, as employees with whom employment legal relationships have been established in accordance with the provisions of the Labour Law.

The employer shall pay the State entrepreneurial risk fee for each employee in the amount specified in regulatory enactments for each month in which the employment relationship with the employee has existed.

When analysing the regulatory framework, the author concludes that it has had and continues to have a positive impact on economic development and on the state budget, since:

- 1) a fund for employee claims guarantees has been set up, with the largest amount of funds being paid by employers who have a potential insolvency process and the State has, in this case, established a kind of insurance system that works for workers and also for the benefit of the State, as the State does not need to find additional resources from other budget resources in order to ensure the protection of employees;
- 2) such minimum payment shall be easily realized and paid to employers;
- 3) an improved system of employee protection has been established, which does not impair the situation of other creditors in insolvency proceedings but has a positive impact on the financial situation of the employees of the insolvent employer concerned and creates a sense of security and does not create social tensions in society.

When introducing a system of guarantees to satisfy employees' claims, the State established Insolvency Control Service.

The Insolvency Control Service was established on 16 January 2002 with a view to implementing the State insolvency policy, ensuring the protection of public and public interests in order to mitigate the adverse social consequences of the insolvency of companies and companies (Insolvency Control Service).

The Insolvency Control Service is the holder and manager of the employee claims guarantee fund.

Resources of the employee claims guarantee fund shall consist of:

- 1) the part of the entrepreneurship risk State duty (Table 1, Table 2);
- 2) gifts and donations;
- 3) amounts recovered by insolvency administrators (Parliament of the Republic of Latvia, 2001).

For research purposes, in order for the author to confirm her view that the introduction of a risk charge is a successful solution which has undermined social tension and contributed to protecting employees in the event of insolvency of their employers, the Insolvency Control Service provided statistics, at the author's request, in an aggregated manner on the revenue and costs of the employee claims guarantee fund (Table 3, Figure 2).

Although the employee claims guarantee may consist of three different revenues, the author of an analysis of the revenue structure of this fund concludes that, between 2003 and 2019, 89 % of the proceeds were a part of the risk fee, 11 % of the sums recovered by administrators, whereas gifts and donations that would have been transferred to the income of that fund were not included (Table 3).

Table 3

**Revenue of the employee claims guarantee fund, 2003-2019, EUR**

Period, year	Revenue of the employee claims guarantee fund, EUR			Total revenue, EUR
	part of the State entrepreneurial risk fee	gifts and donations	amounts recovered by administrators	
2003	5 788 540.25	0.00	45 648.57	5 834 188.82
2004	2 471 975.50	0.00	66 907.70	2 538 883.20
2005	1 889 881.56	0.00	45 358.31	1 935 239.87
2006	86 194.73	0.00	436 707.82	522 902.54
2007	303 467.25	0.00	78 438.65	381 905.91
2008	548 815.89	0.00	142 876.25	691 692.14
2009	832 062.86	0.00	52 439.94	884 502.80
2010	2 195 580.84	0.00	65 497.64	2 261 078.48
2011	2 195 284.89	0.00	150 151.39	2 345 436.28
2012	2 368 407.12	0.00	192 666.80	2 561 073.92
2013	2 579 773.79	0.00	775 533.43	3 355 307.22
2014	2 726 824.80	0.00	160 772.55	2 887 597.35
2015	2 771 876.08	0.00	1 440 552.11	4 212 428.19
2016	2 807 069.08	0.00	161 677.84	2 968 746.92
2017	2 584 004.56	0.00	192 381.14	2 776 385.70
2018	1 809 562.14	0.00	225 719.62	2 035 281.76
2019	2 110 503.59	0.00	296 050.83	2 406 554.42
<b>Total, EUR</b>	<b>36 069 824.93</b>	<b>0.00</b>	<b>4 529 380.60</b>	<b>40 599 205.53</b>

*Source: author's calculations based on the author's special request of the data from Insolvency Control Service*

During the period 2003-2019, the largest total fund revenue was in 2003, driven by the determined amount of the State entrepreneurial risk fee, which was the highest in the period to be analysed in that year (Table 1, Table 2, Table 3). The smallest revenue was in 2006, 2007 and 2008, when the legislator determined the amount in EUR to be paid to the employee claims guarantee fund. Starting with 2009, the legislator determined the amount of employees' claims be transferred to the guarantee fund as a percentage of the total amount of State entrepreneurial risk fee revenue, which contributed significantly to the fund's revenue. Insolvency administrators may, within the framework of the insolvency proceedings, recover amounts, for example by claiming covered debts or recognizing transactions as invalid, as well as by deducting losses from members of the administrative bodies of the legal person. The data collected show that administrators recover amounts, but overall, in the employee claims fund, they account for only a tenth of the total fund revenue.

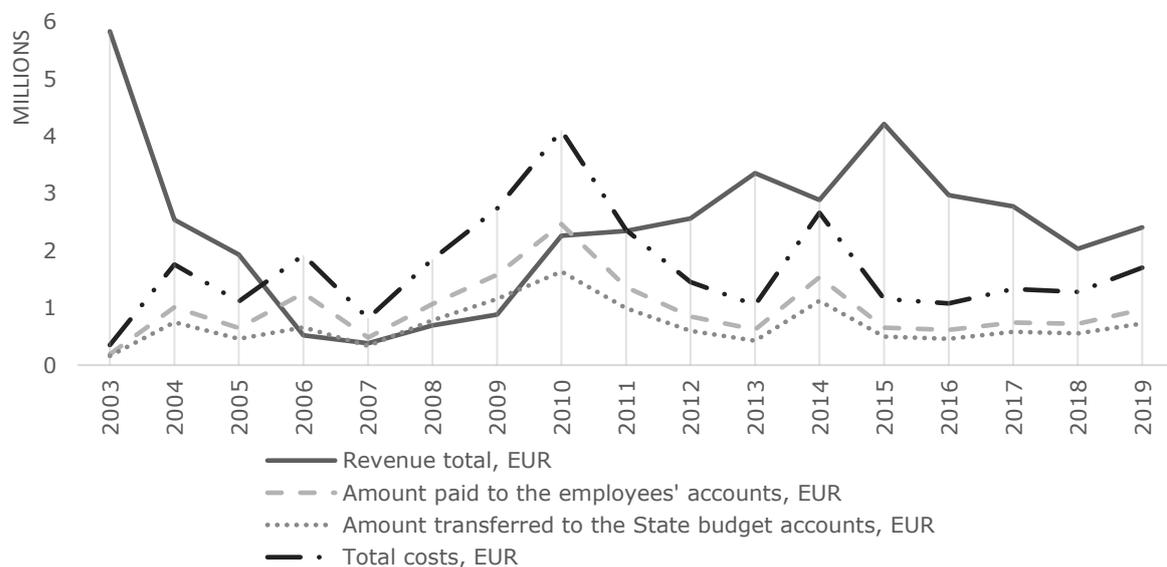
In order to assess whether the revenue is sufficient to cover the claims of employees, it is necessary to analyse the costs of this fund for employee claims and related tax payments (Figure 2).

Under the regulatory framework employee claims shall be satisfied from the resources of the employee claims guarantee fund in the following amounts:

- 1) work remuneration for the last three months of employment legal relationship in the 12-month period before the occurrence of the insolvency case of the employer;
- 2) reimbursement for annual paid leave rights to which have been acquired in the 12-month period before the occurrence of the insolvency case of the employer;
- 3) reimbursement for other types of paid leave in last three months of employment legal relationship in the last 12-month period before the occurrence of the insolvency case of the employer;

- 4) severance pay in the cases laid down in the Labour Law rights to which have been acquired no earlier than in the 12-month period before the occurrence of the insolvency case of the employer;
- 5) reimbursement for damages for the whole unpaid time period;
- 6) reimbursement for damages for the four subsequent years (Parliament of the Republic of Latvia, 2001).

During the period 2003 to 2019, the insolvency proceedings were declared to 2125 employers who were not covered by liabilities to their employees at the time of the declaration of insolvency, and these claims of employees fulfilled the criteria specified in regulatory enactments in order to be covered by the funds of the employee claims guarantee fund. During the same period, 34725 workers have been paid out of the employee claims guarantee fund for a total amount of EUR 28 709 067, including 58 % of that amount paid to the employees' accounts and 41 % transferred to the State budget accounts. From 2013 onwards, compensation paid from this fund to administrators for employees covered by employees' claims of 0.07 %.



**Source:** author's calculations based on the author's special request of the data from Insolvency Control Service

**Fig. 2. Revenue and expenses of the employee claims guarantee fund, 2003-2019, EUR**

In analysing the amount of revenue and expenditure during the analysis period in the employee claims guarantee fund, the author concludes that, on average, the revenue is more than the expenditure showing that, in general, the form of revenue and expenditure planning has justified itself, with the exception of three-year decisions (2006-2008), when it was decided to pay a specific amount rather than to make a contribution as a percentage of those collected risk charges. In addition, the regulatory enactments have periodically imposed limits, including in terms of money, on the amount to be paid from the employee claims guarantee fund, in order to be able to satisfy as many employees' claims as possible during the crisis. Initially and also today, there are conditions on what kind of claims are covered by the fund for employee claims.

Expenditure over revenue was exceeded by six years, during the period 2006-2011, which is explained by deliberate reductions in contributions and the effects of the financial crisis. The growing cost increases coincide with periods when the number of companies with limited liability liquidation has increased. The author has analysed and published the dynamic of insolvency and liquidation of limited liability companies in separate studies and papers. Until 2003, a system of privileges for the satisfaction of employees' claims was operational, but from 2003 the guarantee system began to

operate, which significantly reduced the time during which a worker could receive a fee for his or her claim to the extent specified by law.

As the author pointed out above, 41 % of the total costs of the employee claims guarantee fund was paid to the State budget accounts during the analysis period. These contributions are directly linked to workers and their social protection (Table 3).

Table 3

**Expenses of the employee claims guarantee fund for employees and State budget, 2003-2019, EUR**

Period, year	Number of insolvent employers	Number of employees' claims (paid)	Amount paid to employee accounts, EUR	Amount transferred to the State budget accounts		
				Total, EUR	Personal income tax	Mandatory State Social Insurance Contributions
2003	15	829	190 107.06	161 164.42	61 820.93	99 343.49
2004	80	2 791	1 010 700.00	751 105.57	281 816.84	469 288.73
2005	103	1 497	651 052.07	460 703.13	180 021.74	280 681.38
2006	95	2 598	1 260 116.62	659 656.18	257 531.26	402 124.92
2007	60	928	482 492.99	335 938.61	130 787.53	205 151.08
2008	84	1 029	1 068 397.45	781 512.34	298 808.77	482 703.57
2009	138	2 015	1 580 837.62	1 155 221.09	452 332.37	702 888.71
2010	340	5398	2 465 088.42	1 635 760.47	621 570.17	1 014 190.30
2011	303	3870	1 363 771.41	996 908.10	394 623.54	602 284.56
2012	172	2158	852 673.01	601 575.97	247 800.24	353 775.73
2013	128	1418	621 466.20	428 054.78	168 626.19	259 428.59
2014	111	3590	1 539 322.59	1 122 806.15	442 591.64	680 214.51
2015	108	1432	656 815.17	500 232.08	192 160.23	308 071.85
2016	108	1226	613 451.15	460 067.42	171 559.34	288 508.08
2017	85	1425	742 945.77	582 292.72	221 594.21	360 698.51
2018	83	1252	720 245.75	553 510.73	203 520.73	349 990.00
2019	112	1269	973 943.31	729 130.70	257 350.07	471 780.63
<b>Total:</b>	<b>2 125</b>	<b>34 725</b>	<b>16 793 426.56</b>	<b>11 915 640.45</b>	<b>4 584 515.80</b>	<b>7 331 124.65</b>

Source: author's calculations based on the data from Insolvency Control Service

By establishing a national tax instrument, the State entrepreneurial risk fee, the State acted as an insurer against uncollected tax payments and without creating an additional burden on the budget of providing financial resources to employees of insolvent companies.

**Conclusions, proposals, recommendations**

- 1) Two ways of protecting the rights of employees or satisfying claims are distinguished: (1) privilege system and (2) guarantee system.
- 2) Since 2003, the companies in Latvia are obliged to pay the State entrepreneurial risk fee. It is the duty to calculate the State entrepreneurial risk fee of any employer who may be declared into insolvency proceedings in accordance with the Law on Insolvency. The employer shall pay the State entrepreneurial risk fee for each employee in the amount specified in regulatory enactments for each month in which the employment relationship with the employee has existed.
- 3) Resources of the employee claims guarantee fund shall consist of: the part of the entrepreneurship risk State fee; gifts and donations and amounts recovered by insolvency administrators. From 2003 to 2019, 89 % of the proceeds are part of the risk fee, 11 % of the sums recovered by administrators, whereas gifts and donations that would have been transferred to the income of that fund are not included.

- 4) Analysing the amount of revenue and expenditure during the analysis period in the employee claims guarantee fund, the author concludes that, on average, the revenue is more than the expenditure showing that, in general, the form of revenue and expenditure planning has justified itself, with the exception of three-year decisions (2006-2008), when it was decided to pay a specific amount rather than to make a contribution as a percentage of those collected risk charges.
- 5) During the period 2003 to 2019, 34725 workers have been paid a total amount of EUR 28 709 067 out of the employee claims guarantee fund, including 58 % of that amount paid to the employees' accounts and 41 % transferred to the State budget accounts.
- 6) By establishing a national tax instrument, the State entrepreneurial risk fee, the State acted as an insurer against uncollected tax payments and without creating an additional burden on the budget of providing financial resources to employees of insolvent companies.
- 7) The author considers that the amount of the State entrepreneurial risk fee set in recent years at EUR 0.36 per employee per month is sufficient in the current economic situation in the country. Further investment of State entrepreneurial risk fee revenues in the employee claims guarantee fund should be pursued.

## Bibliography

1. Budget and Finance (Taxation) Committee. (2002), *Annotation of Law "On Protection of Employees in case of Insolvency of Employer"*. Retrieved: [https://www.saeima.lv/L\\_Saeima7/lasa-LP0749\\_0.htm](https://www.saeima.lv/L_Saeima7/lasa-LP0749_0.htm). Access: 08.02.2020.
2. Cabinet or Ministers (2002-2018). Cabinet Regulation No 608, 600, 10, 850, 721, 849, 1031, 1478, 1212, 901, 700, 1249, 751, 692, 836, 772, 694, "Rules on the State Business Risk fee in 20xx". Retrieved: <https://likumi.lv/>. Access: 08.02.2020.
3. Council Directive 80/987/EEC of 20 October 1980 *on the approximation of the laws of the Member States relating to the protection of employees in the event of the insolvency of their employer* (1980). Retrieved: <https://eur-lex.europa.eu/eli/dir/1980/987/oj>. Access: 02.02.2020.
4. Hughes, C. (2000), *Towards Pinstriped Unionism: Protecting Employee Entitlements Through Securitisation*. Bond University Faculty of Law. BondLawRw 2; (2000) 12(1) Bond Law Review 7. Retrieved: <http://www.austlii.edu.au/au/journals/BondLawRw/2000/2.html#fn38>. Access: 15.04.2020.
5. Insolvency Control Service (s.a.) *History*. Retrieved: <http://mkd.gov.lv/lv/parmums/vesture/>. Access: 03.02.2020.
6. Karaley, Y. (2016), *Insurance for Handling Employee Entitlements in the Event of Employer Insolvency (Bankruptcy)*. Nauki o Finansach Financial Sciences, 2016, No 2 (27), doi: 10.15611/nof.2016.2.03. Access: 15.04.2020.
7. Mucciarelli, F.M. (2017), *Employee Insolvency Priorities and Employment Protection in France, Germany, and the United Kingdom*. Journal of Law and Society, 44: 255-282. doi:10.1111/jols.12025. Access: 15.03.2020.
8. Parliament of the Republic of Latvia (2001). *Law "On Protection of Employees in case of Insolvency of Employer"*. Retrieved: <https://likumi.lv/ta/en/en/id/56944-on-protection-of-employees-in-case-of-insolvency-of-employer>. Access: 03.03.2020.

## **SPENDING REVIEW AS ESSENTIAL PART OF PUBLIC SECTOR BUDGETING: LATVIAN EXPERIENCE**

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**Abstract.** One of the modern trends in public sector budget governance is evaluation of allocation of the resources, re-allocation of budget resources to achieve political goals and ensure sustainable financing for different public needs. This study is the first analysis of Latvian experience of public spending reviews in 2016 – 2019, characterises present patterns and proposes changes for future spending reviews. In general, the Ministry of Finance is conducting public spending review as quite technocratic exercises – an opportunity to make sure that existing public institutions' budgets are being spent as efficiently as possible and conduct decision making on the civil service level. However, involvement of political level is a possibility to ensure that public spending objectives are met and the allocation of public resources reflects policy goals. The main task of the paper is to analyse the Latvian experience of regular public spending reviews and generalize recommendations for other countries and future development of the spending reviews. It can be concluded that increasing prioritisation of budgetary spending and its relation with economic development can be supported by spending reviews as a mechanism to increase government spending in priority policy areas and to ensure reallocation of resources for underfinanced budget programmes through improvement of the efficiency of expenditures. Recommendations on improvement of the spending review process and possible changes to the budget law legislation are worked out.

**Key words:** public finance management, spending review, budget governance, the budget law.

**JEL code:** H61; H11

### **Introduction**

The state of many countries' public finances, as well as demand for sustainable and efficient public finances, has increased the interest for application of advanced innovative consolidation and budget management methods. Spending evaluation as well as reviews are among the developed budget planning and governance approaches and were conducted by countries before the 2008 - 2009 financial crisis (Canada, the Netherlands, Denmark, Finland, the United Kingdom, Australia) and introduced the approach after the crisis (Ireland, France). Generally, reviews were applied in countries which could be characterized by economic advancement and mature public management systems, but Latvia could be an example of Central and Eastern European countries which also successfully apply this method. The **research aim** is to examine the spending review and the budget process in Latvia. To achieve the aim, **research tasks** are defined - to examine legislation related to the spending reviews and to analyse the characteristics of spending reviews in Latvia conducted during 2016 – 2019 years for annual budgets. The research examined the spending review in Latvia as a process and as an evaluation of the budget expenditures. **Methodology and data.** The scientific literature review, analysis and synthesis, induction and deduction methods were employed to execute the research.

### **Spending reviews as part of budget process**

As stated by Robinson (2014), since the global financial crisis in 2007 -2009, spending reviews become to be widely used by OECD governments, mainly as a tool for reducing aggregate expenditure to achieve fiscal consolidation. Based on scientific literature review (OECD, 2013) the author defines spending review as a process for systematically scrutinising expenditures to identify and implement savings measures. One of parts of the reviews is evaluation of the expenditures and re-prioritisation of the budget expenditures to ensure the fiscal space available for new spending. A

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majority of developed countries conducts spending reviews in the last decades - Canada, New Zealand, the Netherlands, Italy, Ireland, France and the UK (Arena and Arnaboldi (2013); Ferry and Eckersley (2011); Bogacheva and Smorodinov (2018); Kennedy and Howlin (2017); Monacelli and Pennisi (2015). Based on the European Commission (2018); Robinson (2014); van Nispen (2016), it can be summarised that the spending reviews are used as an instrument to identify opportunities to improve the performance of spending programmes. The literature analysis approves that there is no single methodology for spending reviews. As stated by European Commission (2018), spending reviews fall into one of two categories : 1) strategic reviews (for assessment of the objectives of policies and programmes and evaluation of the efficiency of spending), to prioritise programmes based on policy objectives or performance; 2) efficiency reviews, which seek to identify how an existing service or programme can be delivered with fewer resources. Vandierendonck (2014) states that spending reviews can have two dimensions – 1) a strategic dimension questioning the relevance of public funding for a specific policy objective; 2) a tactical dimension aiming at increasing - for policies passing the strategic test - the efficiency of each public euro spent by optimising the relationship between expenditure level and impact, for example in terms of quality of service. There is no clear or common used definition of what a spending review is as a precise technical tool, as well as little academic research on the concept of a spending review and elements affecting performance of the reviews and spending evaluations. Researchers have been focusing on analysing the effects of introducing a spending review by a government, investigating the procedure's performance in reducing spending and helping to solve problems connected with financial sustainability (Bourgon (2009); Lapsley and Midwinter (2010); Ferry and Eckersley (2011). The OECD (2011; 2013) outlined a conceptual framework and the guidelines that regulate application of spending reviews. Catalano and Erbacci (2018) established the main notable theoretical framework for spending reviews. Mainly all mentioned researchers were focused only on medium-term spending reviews implemented after 2008, i.e. on spending reviews implemented at times of cuts (e.g. austerity or at least challenging economic conditions) and finalised to decrease public expenditure by addressing a strategy of short-medium term savings and cutbacks. However, the use of spending reviews could also be devoted to direct spending on new priorities – as it was before 2008, e.g. spending reviews could be (and sometimes are) also employed during better economic climates (e.g. in the UK the spending review was initially brought in during relatively good economic times by the New Labour government (Postula (2017); Emmerson (2019)). Research on performance budgeting issues (Marti, 2019) also indicates the importance of linkage between performance budgeting, budget flexibility and the implementation of medium-term expenditure frameworks. One of the primary solutions could be the integration of performance budgeting evaluation within the spending review process.

Based on Robinson (2014) it can be concluded, that there are essential differences between countries in the design and scope of the spending review process. Robinson (2018) provides classification of the reviews - selective and comprehensive spending reviews. Robinson (2018) defines a *selective* spending review as a spending review that is limited to several predefined review topics. For example, the government might decide that in the coming year the spending review process will look for savings options from review topics such as social assistance benefits to families, information and communications technology acquisition and management, and waste management services. Latvia, as well as Denmark (Bogachyova O. and Smorodinov O. (2019); Kraan (2011)) and the Netherlands (de Geus and Kraan (2012); van Nispen and de Jong (2017); Kabel, (2010)) are examples of countries that use the selective spending review approach, choosing review topics in

each round of spending review. In scope of Latvian experience, pension and benefit systems, system of compensation of pharmaceuticals, information technology resources and management were analysed. Whereas Robinson (2018) also defines a *comprehensive* spending review, which is a spending review process that is not limited to any predefined list of review topics. In a comprehensive spending review, the Ministry of Finance and line ministries are asked to undertake an unconstrained search for the best savings options. This does not mean that in a comprehensive spending review, all programmes and business processes are reviewed—that would be impossible. Countries that have undertaken comprehensive spending reviews include the UK and Ireland. Latvian spending reviews also include negotiations with line ministries and review of expenditures to find possible savings. Based on the literature analysis and taking into consideration coverage and interventions, spending reviews can be classified into three main categories (Table 1).

Table 1

**Comparison of spending review approaches**

<b>Approaches and features</b>	<b>Strategic review</b>	<b>Technical review</b>	<b>Medium-term review</b>
<b>Spending review function</b>	Centralised, comparable departmental/programme review	Decentralized, single internal/external review of function/programme	Centralised review of a specific function within ministries, e.g. real estate, ICT solutions
<b>Coverage</b>	Efficiency and effectiveness	Efficiency	Efficiency and performance evaluation
<b>Evaluation issues</b>	Several issues - Operational/impact/ relevance to the current policy	One issue: operational issue	One issue: operational issue
<b>The flow of the process</b>	Bottom-up	Top-down	Top-down
<b>Interventions</b>	Efficiency gains and centralised priority settings	Efficiency gains and linear cuts	Medium-term gains and initial investments

*Source: created by the author, based on Robinson, 2018*

Latvian spending review experience combines both approaches – the Cabinet of Ministers in the spring defines the scope of the spending review and this approach closes to the selective spending review; but during the process, line ministries and finance ministry undertake other measures for savings and reallocation of the resources.

**Organization of the spending review in Latvia**

Latvian budgetary law is represented by the Law On Budget and Financial Management (1994) Latvian law on budget and financial management (Badovskis, M. *et al.* (2017)), which follows international standards of a legal framework for public finance (Lienert, I. (2013)). The Law On Budget and Financial Management (1994) determines the procedures for the formulation, approval and implementation of the State Budget and local government budgets, as well as responsibility in the budget process. Financial management within the meaning of this Law applies to the funds of the State Budget and local government budgets. As an official starting point for Latvian spending reviews are amendments to the Law on Budget and Financial Management were approved by the Parliament and these amendments entered into force as of 1 January 2016. According to these amendments, the law was supplemented by the article 16.<sup>3</sup> "State budget spending review". Article provisions (Law On Budget and Financial Management, 1994) state that "in order to implement the State policy more efficiently and economically, and also to regularly optimise the budget expenditure and assess its compliance with the priorities and objectives laid down in development planning documents, the Cabinet shall ensure continuous and systematic State budget spending review. The

Cabinet shall concurrently decide on the scope of the State budget spending review and approve the schedule for the preparation of a budget. The Minister for Finance shall, within the deadline specified in the schedule for the preparation of a budget, submit to the Cabinet the results of the State budget spending review and suggestions for the use of these results in the process of developing the draft medium-term budget framework law and the draft annual State budget law." Since 2016 to ensure the interaction, evaluate possible reforms that would increase successful use of budget resources, as well as regularly assess possibilities to optimise the budget expenditure and to make proposals on these issues to the Cabinet of Ministers, the government decided to create the permanent inter-institutional Working group. The resolution of the Minister of Finance approved the working group and its task is to make proposals for the spending review priorities. In 2016, a comprehensive spending review was carried out, which included assessment of all expenditure of the ministries. The civil servants, considering their knowledge of the public administration processes and finance, did the initial expenditure evaluation. Since 2019, the parliamentary secretary of the Ministry of Finance Atis Zakatistovs chairs the working group, thereby ensuring the political involvement in the spending review process. Also, in 2019 for the first time, spending ministry ministers participated in the working group, discussing the sector funding policy revision possibilities.

Spending Review is an integral part of the preparation of the State budget and consists of the following elements.

- **Scope:** The Cabinet of Ministers approves proposals for changes in the State budget policy areas and expenditure.
- **Staff:** According to the scope experts of the Ministry of Finance together with line ministries carries out a spending review of State budget.
- **Platform:** inter-institutional working group holds discussions on the spending review ideas and results.
- **Results and decisions:** The Cabinet of Ministers meets the results of Spending Review Report and decides on the implementation of the results.
- **Accountability and public access:** Results of the Spending Review Report are available at the website of Ministry of Finance.

Given that spending review over the years has become an integral part of medium-term budget development process as well as has proven to be an effective tool from which results provides financial resources for the sector priorities not only annually but also for the medium-term, in the middle of 2018 in the Ministry of Finance there was created a Budget Development Division, which directly is responsible for the spending review.

The Budget Development Division was established with the aim to strengthen analytical capacity. The Budget Development Division has experts with strong analytical skills and experience in public administration. One of the main preconditions in the spending review process is close cooperation with the line ministries. To strengthen this cooperation, within the spending review process, the Budget Development Division organizes various levels of negotiations with line ministries discussing the effectiveness of spending and effective achievement of results.

The Budget Development Division is part of the Budget Policy Development Department and its main tasks are:

- 1) to organize the annual state budget spending review process and to ensure that its results are included in the budget development process (prepare proposals for the scope of the state budget spending review; prepare information, guidelines and give consultations for the organization of

- the spending review process; and to summarize and analyse the results of the spending review and to make proposals for its further use in the budget development process);
- 2) to systematically analyse the state budget expenditure and prepare relevant analytical information, make proposals for changes in the state budget expenditure policy and ensure their implementation;
  - 3) to ensure the accumulation of information on results and performance indicators.



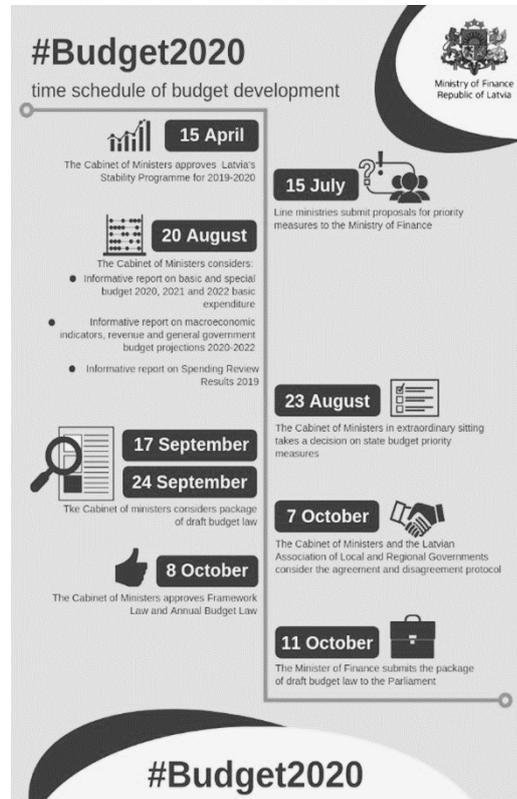
**Source:** author's created based on the Ministry of Finance, 2020

Fig. 1. **The main stages of the spending review process**

The central part of the spending review process is an intra-departmental working group which is formed by Minister of Finance involving staff of the budget sector of the Ministry as well as experts from Bank of Latvia, State Chancellery, Cross-sectoral Coordination Centre and State Audit Office (as an observer). Responsible stakeholders and their primary areas of involvement are as follows.

- **Bank of Latvia** - provides macroeconomic analysis- chosen because it collects and processes statistical data, as well as develops, compiles, analyses and disseminates statistical information. One of the working areas of the Bank is research. Experts of the Bank has provided macroeconomic analysis for different areas. Also, together with their experts, an analysis was done on a zero-based budgeting approach for the reimbursed pharmaceutical products and state library management.
- **Cross-sectoral Coordination Centre (CSCC)** - provides a view on the linkage between budget expenditure and policy objectives and results - chosen because it is the leading institution in national development planning and coordination in Latvia. CSCC is responsible for the National Development Plan of Latvia and the Sustainable Development Strategy. Besides, CSCC does sector policy cross-sectoral supervision and develops proposals for state development and implementation. In cooperation with the CSCC within the spending review process, a permanent accounting model for the allocation of the state budget expenditure was created, improved objectives, results and performance indicators for the state budget programs and sub-programs.
- **State Chancellery** - provides expertise and proposals for investment efficiency and productivity analysis - chosen because it ensures public administration, human resource and public sector remuneration policy development, coordinates and supervises its implementation. Within the spending review, State Chancellery has developed and implemented permanent invested funding and implemented sector policy efficiency and economy methodology of analysis.
- **State Audit Office** - participates as an observer - taking into account that the State Audit Office is an independent collegial supreme audit institution and is a critical element of the State's financial control system serving the public interest by providing independent assurance on the effective and useful utilization of central and local government resources it performs as an

observer in the spending review working group. For the spending review, State Audit Office contributes to the working group with its audit results on different issues. For example, compliance audits within financial audits, aimed at verifying that transactions that correspond to the financial statements comply with legislation, planning documents and national (international) practice. Within the budget process, spending review is included in the decision-making schedule (Fig. 2)



Source: Ministry of Finance, 2020

Fig. 2. Example of the schedule of the spending review process

### Spending review as the instrument for ensuring proper expenditure prioritisation

For the spending Review 2016, on 1 March 2016 the Cabinet of Ministers approved the scope of spending review (effects of budget elasticity tools; correlation to market prices; irrational spending changes compared to 2015; analysis of past new policy initiatives etc.). Reviewing priorities were defined as main spending sectors – health and education sectors (also two working groups were set up for the overall process, one of the dedicated explicitly to health spending). Also, fundamental review and update performance information linking it to policies and budget programme expenditures were done. As a part of the process, improvement to develop tools for efficiency and effectiveness analysis of expenditure (linking expenditure with policy outcomes and outputs). Within 2016 spending Review, expenditure non-performance was tackled, through analysis of Regular surplus in budget programmes from 2013 to 2015, aligning costs with direct performance results. The Review also presented possibilities to make determined policy changes in legislation that affect revenue and expenditure, e.g. redistributions from new policy initiatives (made redistributions from new policy initiatives over the last three years (from 2013 to 2015)), analysis of legislation regarding fixed-term measures, the update of expenditure in line with updated GDP forecasts. As technical review expenditure redistributions from one budget programme to another (from 2013 to 2015) and revenue non-performance (disregard of specific toll revenue) were done. As medium-term measures, horizontal review of the expenditures on heating and fuel was done with medium-term expenditure

trend compared to market prices. As the result of the review, in fiscal terms efficiency gains of EUR 61,3 million for 2017 were achieved, which provided additional funds for reprioritising expenditures both within line ministries and also for general government priorities as EUR 32,6 million were re-allocated for government priorities and EUR 28,7 million were identified as internal ministerial resources.

Spending Review 2017 consisted of two main parts. As strategic review changes in sector policy funding through an update of developed proposals, assessment of the progress of implementation, and implementation of 'zero-based' budgeting - pilot projects for Ministry of Health and Ministry of Culture, together with the expertise of Bank of Latvia. As changes in state budget policy, a new procedure for funding allocation to priority sector measures was established, which is an update of procedures for accountability of base expenditures in line with budget management improvements. As a technical review, a review of long-term vacant posts, analysis of support functions and horizontal measures for priorities, identification of potential internal resources was done. As a part of the comprehensive spending review, also sectoral proposals for function optimization, other additional proposals were considered. During the process, a review of lowest priority administrative expenditure was done, which is a- revised lower priority administrative expenditure for the period 2015-2019 such as business trip and work travel expenses, communication services, office goods. As for medium-term review, a review of priority measures from previous periods was conducted. In order to find additional funds for the financing of current priority actions for the years 2018, 2019 and 2020, a review has been carried out of the pre-allocated funding for priority measures, assessing the relevance, results achieved and effectiveness of the priority measures. In fiscal terms, efficiency gains of EUR 81,1 million for 2018 were achieved, which provided additional funds for reprioritising expenditures both within line ministries and also for general government priorities as EUR 28,6 million were allocated for government priorities, and EUR 52,5 million were identified as internal ministerial resources.

Spending Review 2018 was approved on 12 March 2018 by the Cabinet of Ministers covering changes in the state budget policy (legislative amendments for work efficiency, more extensive use of automatic data processing systems, analytical work strengthening) and changes in line ministry policy funding with a focus on effective real estate use and management and information and communication technologies optimization. During the review, horizontal solutions to make public budget resources more efficient were taken: a review of the funding pre-allocated for priorities and other activities, assessing the relevance, results achieved and effectiveness of the priority measures; revised press (newspapers, magazines) subscription costs in both electronic and printed formats; analysis of the share of December's monthly expenditure against total annual expenditure. In the field of information and communication technologies: evaluating resource sharing capabilities for information systems functionality in the field of information and communication technologies in order to promote improvements in the effectiveness of public administration ICT support. Optimisation proposals and their implementation pathways have been developed to improve ICT governance in public administrations. As technical review, proposals from ministries and other proposals to make functions more effective were evaluated. The Cabinet of Ministers adopted results of the review after elections of the Parliament on 5 February 2019. In fiscal terms, efficiency gains of EUR 51,3 million for 2019 were achieved, which provided additional funds for reprioritising expenditures both within line ministries and also for general government priorities – EUR 7,7 million were allocated for government priorities, and EUR 43,6 million were identified as internal ministerial resources, thus

illustrating the increase in the internal reallocations of the resources and prioritization within the line ministries.

For the scope for spending review 2019, horizontal review of the state budget programme expenditure (improvement of the centralised purchasing of goods and services; more economical and rational implementation of the functions funded by the state budget; mitigation of the administrative burden (also municipalities); implementation of the principle of "zero-based budgeting" for specific budget programmes/subprograms); review of the sector policy funding (health sector assessment by reviewing the effectiveness of inpatient healthcare funding; analysis of Ministry of Education and Science supervised areas (higher education, student loans, general education, school system); review of the allocated funding for priority measures; efficiency and improvement of the performance of sector functions) were done. As a part of the strategic review some legislative measures on process and system improvements were taken.

In 2019 based on Canada's experience for spending reviews, a strategic review form for national budget programmes/sub-programmes was introduced. In fiscal terms, efficiency gains of EUR 93,7 million for 2019 were achieved, which provided additional funds for reprioritizing expenditures both within line ministries and also for general government priorities.

The most notable achievements of the spending review during these years are as follows.

- In 2016 – comprehensive spending review, review of all budget expenditure. As a result, "scorecards" were introduced showing the link between resources and policy goals. It helps to understand how much resources (financial and human) have been invested and what are the main benefits for society. An Interactive Budget Infographic has been created, which allows the user to familiarize himself with nine areas of the budget (e.g. health, education, social security) and the funding allocated to them, as well as get to know detailed information on investment directions in each sector and funding source. Visualized budgets of the ministries and other central government institutions where the user can get to know about the areas of activity, allocated funding and the main benefits for the society were created. To ensure the transparency of the health care budget, changes have been made in the structure of the budget programs of the Ministry of Health.
- In 2017 jointly with sector and Bank of Latvia experts, a zero-based budgeting pilot project was prepared for the reimbursed pharmaceuticals. In addition, several regulatory enactments have also been amended, thus reducing the administrative burden on ministries and replacing technical activities with analytical ones. An evaluation of the state budget institutions in the field of public service delivery and ICT areas were made.
- In 2018 evaluation of real estate used for the needs of ministries, their subordinate state budget institutions and other central state budget institutions and their management expenses were done. Proposals for the state budget institutions' information and communication technology expenditure optimization were prepared by working group in cooperation with the Ministry of Environmental Protection and Regional Development.
- 2019 annual spending review was structured into three main areas: revision of the sector policies, revision of the state budget programs, and improvement of processes and systems. In the revision of the sector policies, significant emphasis was on the expenditure areas of the Ministry of Health and the Ministry of Education.
- During the analysed period, the role of strategic review with evaluation of achieved results and allocated resources is increasing as well as the reallocation of the resources within ministries

(sectors) is increasing. The spending reviews have information base which contains historical data of performance indicators and resources granted for priority expenditures, as well as different sections. Expert working groups' conclusions and suggestions also form knowledge base for identification of savings options and reallocation decisions.

### **Conclusions, proposals, recommendations**

- 1) Spending review is an essential part of public sector budgeting, ensuring reallocation of the resources and efficiency of public spending. Law on budget and finance management provides an obligation to conduct the review, but there are no clear procedures and also provisions for obtaining the information for the review.
- 2) Medium-Term and Comprehensive Spending Review is a significant step forward from the annual incrementalism of the past. Medium-term orientation and a meaningful discussion of long-term objectives for spending are crucial, and it allows much more focus on delivery and spend-to-save reforms through which a line-ministry can invest in changes in the first year to produce savings in next years.
- 3) The setting of the total public spending envelope for the review at the beginning of the budget process allows connecting annual budget planning with spring forecasts because the total level of expenditure is driven by 'top-down' macroeconomic considerations around what was affordable within fiscal rules.
- 4) Choosing the performance targets for annual and medium-term review and setting multi-year budgets and outcome targets for public spending through a spending review is a useful tool to improve efficiency and drive performance - but only if they are politically led. Line ministers and civil servants are engaged in the spending review process, and this led to the improvement of efficiency and performance for specific sectors.

### **Bibliography**

1. Agasisti, T., Arena, M., Catalano, G., Erbacci, A. (2015). Defining Spending Reviews: a Proposal for a Taxonomy, with Applications to Italy and the UK. *Public Money & Management*, 35(6), pp. 423-430.
2. Arena, M., & Arnaboldi, M. (2013). Debate: Dealing with Spending Reviews—Italy. *Public Money & Management*, 33(1), pp. 4-6.
3. Badovskis, M., Briede, J., Danovskis, E. (2017). Public Law. In "The Law of the Baltic States" Springer, Cham. (pp. 191-275).
4. Bogacheva, O., Smorodinov, O. (2018). Features of Spending Reviews in Ireland: Experience for Russia, *Financial Journal*, (5), pp. 34-45. doi: 10.31107/2075-1990-2018-5-34-45.
5. Bogachyova O., Smorodinov O. (2019). Spending Reviews: Experience of OECD Countries and Prospects for Russia. *World Economy and International Relations*, vol. 63 (3), pp. 59-67. doi.org/10.20542/0131-2227-2019-63-3-59-67.
6. Bourgon, J. (2009). Program Review. The Government of Canada's Experiences Eliminating the Deficit, 1994-1999. Centre for International Governance Innovation. Retrieved: [https://www.cigionline.org/sites/default/files/the\\_government\\_of\\_canada\\_s\\_experience\\_eliminating\\_the\\_deficit\\_1994-99.pdf](https://www.cigionline.org/sites/default/files/the_government_of_canada_s_experience_eliminating_the_deficit_1994-99.pdf) Access: 10.01.2020
7. de Geus, A., Kraan, D.-J. (2012). The Dutch Fiscal Consolidation Package in a Comparative Perspective, *OECD Journal on Budgeting*, Vol. 12/1. <http://dx.doi.org/10.1787/budget-12-5k9czxkk13lr>
8. Emmerson, C. (2019) the Outlook for the 2019 Spending Review. Retrieved: <https://pdfs.semanticscholar.org/d150/a3571b7a3c22a28b7ddf7d08c69c4ec88929.pdf> Access: 09.01.2020
9. European Commission (2018). Commission Staff Working Document "Spending review". Accompanying the document "Communication from The Commission to the European Parliament, The European Council, The Council, The European Economic and Social Committee and the Committee of the Regions a Modern Budget for a Union that Protects, Empowers and Defends. The Multiannual Financial Framework for 2021-2027" [COM(2018) 321 final]. Retrieved: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018SC0171> Access: 26.02.2020
10. Ferry, L., Eckersley, P. (2011), Budgeting and Governing for Deficit Reduction in The UK Public Sector: Act One "The Comprehensive Spending Review". *Journal of Finance and Management in Public Services*, 10(1), 14-23.

11. Kabel, D. (2010). Fiscal Consolidation in the Netherlands. Presentation to the Network of OECD Senior Budget Officials, Netherlands Ministry of Finance. Retrieved: <http://www.oecd.org/governance/budgeting/45422410.pdf> Access: 10.03.2020
12. Kennedy, F., Howlin, J. (2017). Spending Reviews in Ireland – Learning From Experience, *OECD Journal on Budgeting*. OECD, 16(2), pp. 93–108. doi: 10.1787/budget-16-5jg30cchf0g0.
13. Kraan, D.J. (2011). Recommendations to Denmark for Strengthening the Expenditure Framework and the Spending Review Procedures. Presentation to 32nd OECD Senior Budget Officer Meeting, Luxembourg, 2011. Retrieved: <http://search.oecd.org/gov/budgeting/48141206.pdf> Access: 10.03.2020
14. Lapsley, I., Midwinter, A. (2010). The Modernization of the State: The Comprehensive Spending Review in the UK. *Revue française d'administration publique*, (4), pp. 821-835.
15. Law on Budget and Financial Management (1994). Retrieved: <https://likumi.lv/ta/en/en/id/58057-on-budget-and-financial-management>. Access: 16.02.2020
16. Lienert, I. (2013). The Legal Framework for Public Finances and Budget Systems. In *The International Handbook of Public Financial Management*. Palgrave Macmillan, London pp. 63-83
17. Marti, C. (2019). Performance Budgeting and Medium-Term Expenditure Frameworks: A Comparison in OECD Central Governments. *Journal of Comparative Policy Analysis: Research and Practice*, 21(4), pp. 313-331. doi:10.1080/13876988.2018.1526492.
18. Ministry of Finance (2020). Spending reviews. Retrieved: [https://www.fm.gov.lv/en/s/budget/spending\\_review/](https://www.fm.gov.lv/en/s/budget/spending_review/) Assess: 01.03.2020
19. Monacelli, D., Pennisi, A. (2015). Spending Review: Una, Nessuna, Centomila. *Economia Pubblica*. FrancoAngeli Editore, (1), pp. 69–108. doi: 10.3280/EP2015-001004.
20. OECD (2011). Typology and Implementation of Spending Reviews. GOV/PGC/SBO(2011)9. Retrieved: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=GOV/PGC/SBO\(2011\)9&doclanguage=en](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=GOV/PGC/SBO(2011)9&doclanguage=en) Access: 01.03.2020
21. OECD (2013). Spending Review. Paper delivered at the 34th Annual Meeting of OECD Senior Budget Officials. Paris: OECD, 3-4 June 2013. GOV/PGC/SBO(2013)6. Retrieved: [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=GOV/PGC/SBO\(2013\)6&doclanguage=en](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=GOV/PGC/SBO(2013)6&doclanguage=en) Access: 01.03.2020
22. Postula, M. (2017). Spending Reviews-a Tool to Support the Efficient Management of Public Funds, *Journal of Management and Business Administration. Central Europe*, 25(2), pp. 63–90. doi: 10.7206/jmba.ce.2450-7814.196.
23. Robinson, M. (2014). Spending Reviews. *OECD Journal on Budgeting*, 13(2), 81–122.
24. Robinson, M. (2018). The Role of Evaluation in Spending Review. *Canadian Journal of Program Evaluation*, 32(3).
25. van Nispen, F. K. (2016). Policy Analysis in Times of Austerity: A Cross-National Comparison of Spending Reviews. *Journal of Comparative Policy Analysis: Research and Practice*, 18(5), 479-501.
26. van Nispen, F., de Jong, M. (2017). Evidence-Based Budgetary Policy: Speaking Truth to Power? EUI Working Papers, SPS 2017/1. Retrieved: <http://cadmus.eui.eu/> Access: 16.02.2020
27. Vandierendonck, C. (2014). Public Spending Reviews: Design, Conduct, Implementation. European Commission. Retrieved: [https://ec.europa.eu/economy\\_finance/publications/economic\\_paper/2014/pdf/ecp525\\_en.pdf](https://ec.europa.eu/economy_finance/publications/economic_paper/2014/pdf/ecp525_en.pdf) Access: 16.02.2020

## EVALUATION OF VEHICLE TAXATION IN THE REPUBLIC OF LATVIA BY THE METHOD OF VARIANT OPTIMIZATION USING RELATIVE SINGLE INDEXES

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**Abstract.** The European Commission has evaluated the consequences of the Latvian tax reform in 2018 and declared that the set target of decreasing tax burden for people with low income was not reached, yet the tax reform continuing implementation caused even greater social stratification. The goal of the study was to develop method for determining the rational tax on vehicles based on criteria of fairness and efficiency using an analytical approach. To develop such a method for vehicle taxation, relative single indexes approach as a part of method of variant optimization was used based on relative fuel equivalent coefficient. To analyse the current situation in Latvia and show possible ways of improving it, scenario analysis (three controlling cases) and mathematical modelling by using the developed method were carried out. Analysis of the first controlling case showed that the current situation in Latvia's vehicle taxation policy is not efficient enough from the point of the combination of fairness and efficiency. To improve the situation and achieve zone of optimum (the third controlling case) it is possible to shift tax burden partially from local taxpayers to taxpayers with foreign-registered vehicles. To comply with the recommendation of the European Commission, it is also recommended to set fairness as a primary criterion and make the system more favourable to the taxpayer (when operating in the zone of optimum). It can be achieved by using annual mileage as a base to determine the tax. If recommendations would be implemented partially, it is possible to reach the state (the second controlling case), where vehicle taxation is becoming optimal, yet any change in tax rates or procedures separately will lead to ineffective or unfair solutions. Overall the developed method allows to analyse and forecast most of the changes in vehicle taxation.

**Key words:** method of variant optimization, incomparability, tax rate, vehicle operation tax, free-rider problem.

**JEL code:** H21, H22, H30.

### Introduction

Currently, Latvia's taxation system is being improved. At the same time, the directions of its reform are mainly related to solving problems that affect the interests of the two main participants in tax relations: the state and taxpayers. The reform of the country's tax system, which began in 2018, did not directly affect the vehicle operation tax, but this reform provided for a certain correction, which, of course, applies to all vehicle owners: both individuals and legal entities.

The European Commission, assessing the results of the tax reform, a year after its introduction, noted that it has not yet been possible to reduce inequality between different segments of the population, and made recommendations according to which it is necessary to reduce the level of taxation for low-income people in order to reduce social inequality (European Commission Recommendation, 2019). Therefore, for a comprehensive solution to this problem, it is necessary to develop a fair model of vehicle taxation, which at the same time would be effective.

It is necessary to notice, that any imprudent tax action, incorrect decision-making that is not based on estimates and does not have a clear idea of the expected results will lead to a reduction in state budget revenues and adversely affect the solvency and welfare of the population (Spruge I., 2010). Currently, decisions are made on an intuitive level – there is no description of analytical methods that allow quantifying the changes proposed by the European Commission and thus more accurately building the tax policy. Making decisions on an intuitive level is not optimal, it requires numerous subsequent adjustments, which is confirmed by the need for new tax reform or the introduction of significant corrective measures.

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The goal was to develop method for determining the rational tax on vehicles based on criteria of fairness and efficiency using an analytical approach.

To reach the goal, the following tasks were set:

- to analyse normative enactments and scientific literature on the organization of vehicle taxation;
- to create relative single indicators of fairness and efficiency for determining the optimal tax burden;
- to carry out a graph-analytical analysis to identify the area of optimum (where the most appropriate tax burden located to comply with the set restrictions of fairness and efficiency);
- to develop recommendations to adjust current tax policy regarding vehicle taxation to comply with the rational tax.

The object of the study is the optimum of the vehicle taxation in Latvia, bounded by fairness and efficiency criteria.

The used methods included:

- analysis of primary and secondary data – this part involves gathering and transformation of real data to relative fuel equivalent values, which makes the whole research more scalable;
- mathematical modelling – used for describing a potential transitional situation, that can happen when recommended measures to improve the tax policy regarding vehicle taxation is not implemented in the full extent;
- scenario analysis – represented by analysis of current situations and several possible future situations, that could be achieved by introducing some changes to the existing tax system;
- relative single indexes approach – unique method, used for mathematical calculations with criteria, herein fairness and efficiency.

## **Research results and discussion**

As part of the study, the sources of normative, reference and scientific literature on the organization of vehicle taxation in Latvia and other countries of the European Union were analysed. Based on the analysis of regulatory documentation the current method of calculating the vehicle operation tax in the Republic of Latvia was analysed, identified shortcomings and areas for improving it.

Vehicles in most countries of the world are subject to taxation, bringing a certain share of money to the state budget. The main source of revenue generation in the budget system of the Republic of Latvia is taxes and receipts, in particular, the vehicle operation tax (Law on the Vehicle Operation Tax, 2011). This tax, like every other, is individual, since it assumes its own legal structure.

At the same time, since 2020 in Latvia, several taxes are addressed to owners of vehicles (Natural Resources Tax Law, 2006; Regulations Regarding Recycling, 2011; Value Added Tax Law, 2013; On Personal Income Tax, 1994; Enterprise Income Tax Law, 2018; Law on the Road User Charge, 2014).

The document published by the Ministry of Finance of the Republic of Latvia "Guidelines for state tax policy for 2018-2020" indicates that a number of measures were planned to mitigate the negative impact of the tax reform (which was put into effect from the beginning of 2018), including the following in the aspect of this study: increasing excise tax rates (including fuel for vehicles), limiting the rights to benefits, maintaining the current payment system for collecting tax on vehicle operation (Order of the Cabinet of Ministers, 2017).

Indeed, at the beginning of 2020, the principle of levying a vehicle operation tax remains unchanged.

Since January 2017, a tax has been imposed on vehicles with foreign licence plates travelling in Latvia, if their owners are persons whose place of residence is declared in Latvia (Law on the Vehicle Operation Tax, 2011). Many residents of Latvia registered their cars in Lithuania and Estonia in order to avoid paying the Latvian vehicle operation tax. At the same time, they used the road infrastructure along with other residents of the country.

To combat this phenomenon, amendments were adopted to the Road Traffic Law and to the Law on the Vehicle Operation Tax and Company Car Tax. According to them, owners of vehicles of categories M1 (passenger cars used for transportation of passengers, the number of seats of which, excluding the driver's seat, does not exceed eight seats) and N1 (vehicles intended for transportation of goods and whose gross weight does not exceed 3.5 tons), who have declared their place of residence in Latvia, when operating these vehicles, if they are registered abroad, are obliged to pay the following operating tax: for one day – 10 euros; for a month – 250 euros; for six months – 600 euros; for a year – 1000 euros. The penalty for evading this tax is between 140 and 400 euros.

This tax according to the Ministry of Transport for the first year after its introduction brought in the state budget a little less than 800,000 euros, then its amount began to decrease slightly, and the number of registered vehicles (CSDD – Vehicle statistic, 2020), compared to 2016, increases annually.

This method solved one of the so-called "free-rider problem", i.e. the situation when a consumer of a public good tries to avoid paying for it (Kharevich G. L., 2017).

Starting from January 1, 2020, the excise tax on fuel has been increased in Latvia. The rates of this tax and the objects of taxation are determined by the law of the Republic of Latvia "On Excise Duties" (On Excise Duties, 2004).

It should be noted that according to CSDD data as of 1 January, 2020, the average age of passenger cars registered in Latvia is 14.20 years, commercial vehicles – 11.97 years, and buses – 12.51 years (CSDD – Vehicle statistic, 2020).

All this leads to the fact that for a part of the population, the maintenance and operation of vehicles, based on their total costs, becomes difficult. In this regard, when introducing taxes and fees related to the operation of a vehicle, it is advisable to conduct special analytical studies.

Verovska L., Leontyev A. (2015) and Leontyev A. (2015), have proposed to use a system of relative single indexes for variant optimization used to determine the tax base.

Before carrying out variant optimization, it is necessary to determine the numerical values of relative single indexes that characterize the "fairness" and "efficiency" of the tax policy for each specific case and time period.

To determine terms fairness and efficiency – the classification of tax law principles according to A. Wagner is used, where efficiency principle is a part of fiscal function and principle of equity (or fairness) is part of social justice of taxation (Jarczok-Guzy M., 2017).

It is advisable to determine the numerical values of relative single indexes using this scheme:

$$K_{ij} = \frac{P_{ij}}{P_{i, bl}} \text{ or } K_{ij} = \frac{P_{i, bl}}{P_{ij}} \quad (1)$$

$$i = \overline{1, N}; j = \overline{1, M},$$

where:

- $K_{ij}$  – relative designation of relative single index;
- $P_{ij}$  – value of single index of researched characteristic (equity or efficiency);
- $P_{i, bl}$  – value of single index taken as basic (possible) level;

- $i$  – name of the estimated characteristic;
- $j$  – no. of variant;
- $N$  – the number of relative single indexes;
- $M$  – the number of researched variants.

In all cases, when determining the values of relative single indexes from the formulae (1), the one that corresponds to the improvement of the quality of the index system with an increase in the single index is selected.

When determining the optimal values of the vehicle operation tax from the point of view of the "efficiency" criterion of taxation, it is advisable to assign  $P_{i, bj}$  values after calculations made according to the CSDD data on the number and types of registered vehicles, taking into account the forecast of the dynamics of their change. Further, depending on the required share of funds received in the budget for the implementation of this tax, it is necessary to distribute the tax burden for specific types of transport, which will allow to select the necessary  $P_{i, bj}$  value.

Relative single indexes of "fairness"  $K_{fj}$  and "efficiency"  $K_{ej}$  are formed in such a way that their values, which lie in the range of values less than one, reflect an unacceptable value of quality (their characteristics), and acceptable values of indexes  $K_{ij}$  are equal to or exceed one.

In accordance with the provisions set out in (Economic Commission for Europe, 2015), the EU has the opportunity to improve the efficiency of its economy and reduce greenhouse gas emissions from transport.

As a result of this program, the excise rate for lead-free petrol (the use of tetraethyl lead has been banned in the EU since 2000) increased from 476 euros per 1,000 litres to 509 euros. The excise tax on diesel fuel increased from 372 euros per 1,000 litres to 414 euros, and on liquefied gas used for refuelling vehicles—from 244 euros to 285 euros per 1,000 litres (On Excise Duties, 2004). As a result, when refuelling, in addition to VAT, the consumer pays the new price in accordance with the increased excise tax. It was assumed that after the increase in this excise tax, the price of a litre of petrol will increase by approximately 0.04 euros, diesel fuel by 0.05 euros, and liquefied gas by 0.03 euros. However, in fact, fuel prices in Latvia have increased more, and this is due not only to an increase in the excise tax, but also to an increase in the price of oil (at the end of November 2019, a barrel of oil cost slightly less than 61 euros, and at the beginning of 2020, its price increased to almost 69 euros).

At the same time, a situation arose that requires a separate study: fuel prices in Latvia at the beginning of 2020 were the highest among the countries of the Baltic region, even though the road tax is included in the cost of fuel in Lithuania. As a result, residents of border areas started refuelling in neighbouring countries. These budget losses in Latvia require a separate study. Budget losses are also related to the fact that residents of the country's regions bordering Russia and Belarus, having a simplified border crossing regime, refuel their vehicles abroad, where fuel prices are much lower. At the same time, customs regulations allow them to import into the territory of Latvia a vehicle with a fully filled tank and an additional 10 litres in a canister. Therefore, before rationing the vehicle operation tax rates and adjusting the excise tax rates, it is necessary to study the budget implications arising from the reduction of the total amount of fuel sold for vehicles in the territory of the Republic of Latvia.

Among other problems faced by vehicle owners in Latvia, there is an increase in the volume of bio-additives for diesel fuel from 5 % to 7 %, and for 95 petrol from 5 % to 10 % (E10). However, not all petrol engines of vehicles can run on fuel with a high content of bio-additives (E10). This

applies primarily to older vehicles. As already noted, the average age of passenger cars registered by CSDD in Latvia exceeds 14 years. To maintain the performance of their engines, owners will have to switch to a more expensive brand 98 petrol, which does not contain bio-additives.

As a result, owners of vehicles with low and medium incomes have to revise the mode of operation of their vehicles in the direction of its reduction.

According to studies in 2019, which estimated the amount of fuel for a vehicle that can be purchased for one average salary, conducted in 33 European countries, Latvia was in the 30 th place (Petrol availability rating, 2019).

This is one of the reasons why it is difficult for residents of Latvia to accept EU requirements for improving the environmental situation, which lead to higher fuel prices and an increased tax rate on vehicles that do not meet strict environmental standards.

The average annual cost of maintaining a used car in Latvia is between 500 and 600 euros (Berzins A., 2017). According to official data from the Latvian Central statistical bureau, the average salary in Latvia in 2018 after taxes was 737 euros, in 2019 it increased slightly, and as a result, the employee received about 800 euros (CSB, 2020).

In this study, the calculations were based on the conditional fuel equivalent, i.e. the maximum amount of fuel that can be purchased for an average salary in Latvia.

One of the options for a possible approach to the formation of a relative unit tax when assessing and assigning a vehicle operation tax was considered. After processing data on the most popular brands of passenger cars registered in Latvia (CSDD – Vehicle by manufacturer, 2020), it was found that in fuel equivalent, the owner of a passenger vehicle spends an average of 5 to 8 litres of petrol per month on the vehicle operation tax. At the same time, it would not be burdensome to spend no more than 7 litres of fuel per month on the tax under study.

In this situation, it is assumed that in order to replenish the budget, the state needs each owner to contribute at least 9 units of fuel equivalent to the budget on average. Based on these assumptions, table 1 was formed, and the relative single indexes of fairness and efficiency for different tax options for persons operating vehicles were calculated using formulas (1).

When analysing this optimization model, it turned out that the relative single indexes of fairness  $K_{fj}$  and efficiency  $K_{ej}$  that characterize the vehicle operation tax were incompatible (Fig. 1).

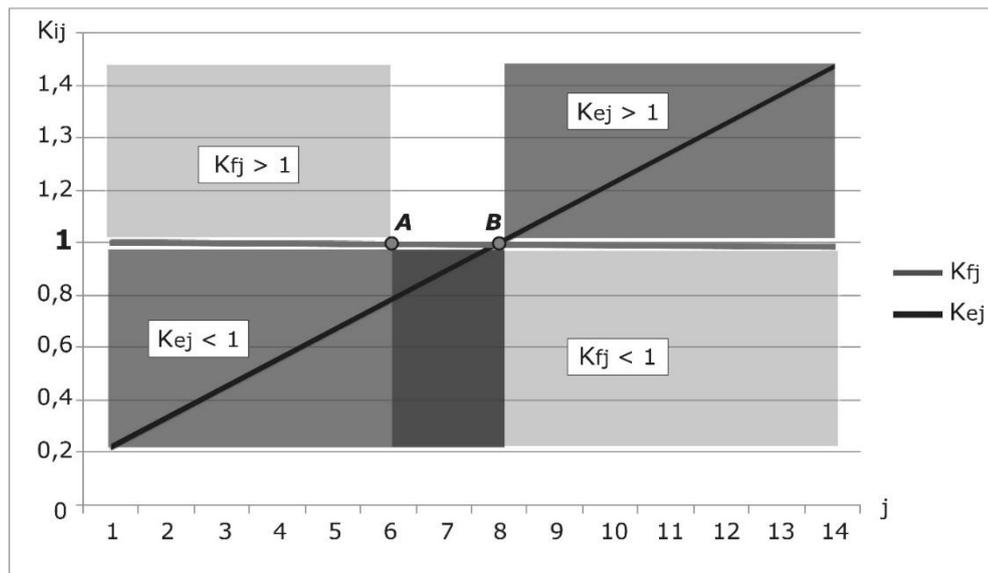
Table 1

**Determination of relative single indexes of fairness and efficiency  
(first controlling case)**

No. of variant	1	...	5	6	7	8	9	10	11	...	13	14
<b>P<sub>fj</sub></b>	610	...	606	605	604	603	602	601	600	...	598	597
<b>P<sub>f, bl</sub></b>	605											
<b>K<sub>fj</sub></b>	1.008	...	1.002	1.000	0.998	0.997	0.995	0.993	0.992	...	0.989	0.987
<b>P<sub>ej</sub></b>	2	...	6	7	8	9	10	11	12	...	14	15
<b>P<sub>e, bl</sub></b>	9											
<b>K<sub>ej</sub></b>	0.222	...	0.667	0.778	0.889	1.000	1.111	1.222	1.333	...	1.556	1.667

Source: created based on the authors' calculations

In such a situation, if it is impossible to change the calculation conditions, it is necessary to determine the importance of each criterion. If the relative single index of effectiveness  $K_{ej}$  is given priority in the ranking, then option 8 or subsequent options located to the right of this option on the abscissa axis (to the right of point B) should be selected as acceptable.



Source: created based on the authors' calculations

Fig. 1. **Combined diagram of relative single indexes of fairness and efficiency (the first controlling case is incompatibility of requirements)**

If priority is given to the relative single index of fairness  $K_{fj}$ , then acceptable values fall on options 1-6, located to the left of point A. It is possible that if the indexes are equally important, it will be necessary to make concessions on both criteria at the same time and choose the most appropriate solution. Ranking should be done using expert methods or, more preferably, using a probabilistic approach. The process of ranking and the use of the method of consecutive concessions in similar situations is shown in the works (Leontyev, 2015; Akhmetshin E. M. et al., 2019).

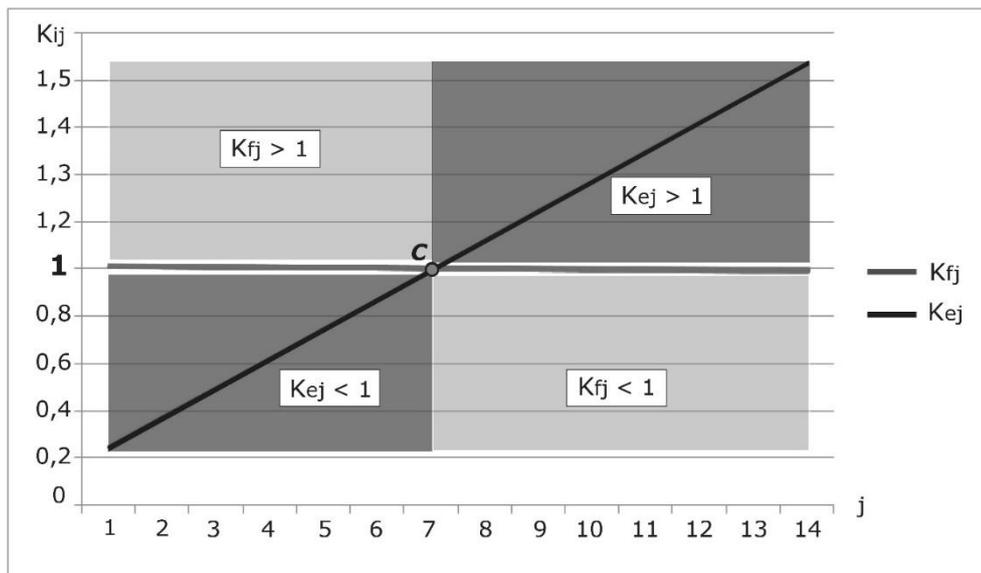
Several more possible situations were covered. If the vehicle operation tax calculated in fuel equivalent is sufficient for the budget in the amount of 8 units, and this amount will not be burdensome for vehicle owners (table 2), then the combined diagram shown in Fig. 1, is converted to the diagram shown in Fig. 2.

Table 2

**Determination of relative single indexes of fairness and efficiency (second controlling case)**

No. of variant	1	...	6	7	8	9	10	11	12	13	14
$P_{fj}$	610	...	605	604	603	602	601	600	599	598	597
$P_{f, bl}$	604										
$K_{fj}$	1.010	...	1.002	1.000	0.999	0.997	0.995	0.993	0.992	0.990	0.998
$P_{ej}$	2	...	7	8	9	10	11	12	13	14	15
$P_{e, bl}$	8										
$K_{ej}$	0.250	...	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875

Source: created based on the authors' calculations



Source: created based on the authors' calculations

Fig. 2. **Combined diagram of relative single indexes of fairness and efficiency (the second controlling case is the only solution)**

In this case, one option that meets the criteria of fairness and effectiveness (7 option corresponding to point C in Fig. 2) is available. It should be noted that the accuracy of this study is not in doubt when analysing past periods. In studies that cover the forecast period, there is always the possibility of changes in the economic environment that affect the combination of relative single indexes  $K_{fj}$  and  $K_{ej}$  that characterize the vehicle operation tax. Point C on the combined diagram shows, that vehicle taxation becoming optimal, yet any change in tax rates or procedures separately will lead to ineffective or unfair solutions.

After adjusting the values taken as basic (reference) values, table 3 was compiled and the combined diagram was built again (Fig. 3). The resulting combination of relative single indexes is the most preferable, since it is not the only possible option, but the area of acceptable values located between the points D and E in the range of values  $K_{fj}$  and  $K_{ej}$  from one and higher.

Table 3

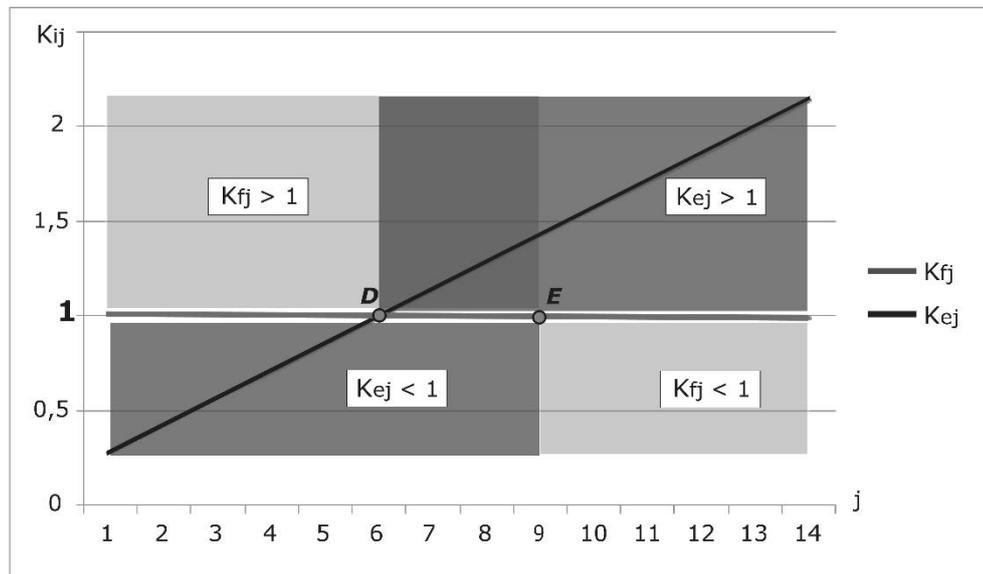
**Determination of relative single indexes of fairness and efficiency (third controlling case)**

No. of variant	1	...	4	5	6	7	8	9	10	...	14
$P_{f,bl}$	610	...	607	606	605	604	603	602	601	...	597
$K_{fj}$	602										
$P_{ej}$	1.013	...	1.008	1.007	1.005	1.003	1.002	1.000	0.998	...	0.992
$P_{e,bl}$	2	...	5	6	7	8	9	10	11	...	15
$K_{ej}$	7										
$P_{fj}$	0.286	...	0.714	0.857	1.000	1.143	1.286	1.429	1.571	...	2.143

Source: created based on the authors' calculations

To achieve optimum zone, which lies between points D and E, it is recommended to establish a tax on the use of Latvian roads for owners of passenger cars that are not declared in Latvia. This applies to owners of passenger vehicles who come to the Republic of Latvia from countries that are part of the European Union or outside its borders. At the moment, they do not pay tolls for driving on Latvian roads. This tax is easy to implement, because Latvia has experience of collecting a similar tax, for example, from owners of cargo transport with a gross weight of more than 3000 kg, and

from vehicles registered outside of Latvia, whose owners have declared their place of residence on its territory. Similar taxes exist in a number of EU countries and are approximately equal to 12.5 euros for 10 days of road use, 18 euros for a month, and 60 euros for a year. Such actions at the same time will allow slightly to decrease a burden for local taxpayers, making it closer to the desired 7 relative litres of the tax burden, but it is not yet achieved, but tax burden could be redistributed on foreigners.



Source: created based on the authors' calculations

Fig. 3. Combined diagram of relative single indexes of fairness and efficiency (the third controlling case is a set of possible solutions)

If it is necessary to adjust the amount of fuel equivalent when searching for suitable solutions using the proposed combined diagram, the following options can be considered as a measure that allows the state to reduce the amount of tax burden imposed on persons who operate vehicles belonging to them.

While adjusting the tax in the optimum zone, it is advisable to establish a correlation with the vehicle's annual mileage. It can contribute to a fairer principle of charging a vehicle operation tax. When implementing this principle, those who drive less – pay less tax (except for owners of premium and sports cars). Gradation is also possible in terms of vehicle engine capacity. For example, only owners of vehicles with an engine capacity of up to 180 l/s may fall under this proposal, other vehicles are taxed at a fixed rate. Such changes will be inside of the optimum zone, yet they will set fairness as primary criterion, which will lead to decrease of poverty and social stratification, achieving the recommendation of the European Commission. If the global situation changes and economy will need extra tax revenues, the regulator will know to what extent tax rates or establishing of the new taxes in vehicle taxation could be carried out to be comfortable enough for the tax payer, not making taxpayer search for opportunities to use tax evasion.

Taxation of vehicles (including not only taxes, but also special charges on their owners) in Latvia is not currently in the comfort zone for a number of categories of taxpayers (the first controlling case). And most of this applies to people with low incomes who operate fairly old vehicles and persons who have a residence permit in Latvia, whose vehicles are permanently registered outside the European Union. The increase in excise tax rates not only makes positive sense, but also has negative onerous consequences for many taxpayers. At the same time, no administrative measures

will ensure the completeness of tax revenues to the budget if the tax mechanism adopted by law is not adequate to the state of the economy and politics.

It should be noted that Latvia has successfully coped with the "free-rider problem" in relation to persons declared in Latvia whose vehicles are registered in other EU countries.

It is necessary to link tax administration with tax innovations. Otherwise, "tax holes" may appear, in which only those who have achieved virtuosity in avoiding taxes win, and the entire economy loses.

Using the methods of variant optimization and "tax prism" will allow to visualize the process of modelling various situations when searching for the fairest and most effective model of taxation of vehicle owners.

A complete rejection of the tax in question through its inclusion in the cost of petrol for Latvia is difficult to implement, since the analysis of fuel prices for the last three years shows that fuel prices in Latvia are somewhat higher in relation to Lithuania and Estonia. This, as already mentioned, leads to the fact that some car owners refuel their vehicles on the territory of these countries.

Fixing the value of the annual mileage of vehicles can be carried out both during technical inspection, and using special GPS navigation systems, or using special devices (How to control mileage, 2017).

At the same time, it is necessary to regulate the tax on vehicles registered in Latvia but used on the territories of other countries, as well as the cost of creating a system for collecting such taxes.

It should be noted that the Ministry of Transport has allocated about 16 million euros for the creation of similar systems in the Czech Republic. Within a few days, a team of IT specialists from the Czech Republic created and delivered a state service to the government for free, which was ordered by another company. As a result, the Czech Transport Minister was dismissed, since the creation of such services does not currently involve significant financial costs (For one weekend and free, 2020).

To select the optimal tax options related to the operation of vehicles, it is possible to additionally use the "tax prism" method proposed by Verovska L. and Leontyev. A. in 2017, which allows to visualize the process of selecting the most acceptable rates of the tax under study.

### **Conclusions, proposals, recommendations**

- 1) The method of variant optimization using relative single indexes for optimal vehicle taxation is a powerful tool that could be used as an anchor to see the current situation and a consequence of possible changes in tax legislation. As a relative index used a relative coefficient of fuel equivalent basing on an average salary, which could show over time dynamic of the situation with the vehicle taxation.
- 2) The analysis of the controlling cases, acquired by the usage of the method of variant optimization using relative single indexes showed that in the first controlling case the tax policy efficiency is incomparable with fairness criterion, so it eventually leads to loss of budget revenues and at the same time stimulates impoverishment of the population. In the second controlling case there is only one optimal point, that complies with the criteria of fairness and efficiency. It should be used by state authorities to set appropriate taxes and adjust tax policy. In the third controlling case there is the area of optimal combination of fairness and efficiency. The government has wide amount of options of possible tax rates, that could be used to adjust tax policy and be a reference to a long-term planning.

- 3) Latvia currently has incomparability zone, meaning the taxation of vehicles is not optimal for most of the taxpayer with low or average income. To move from the incomparability to the zone of optimum it is recommended to establish a tax on the use of Latvian roads for owners of passenger cars that are not declared in Latvia. This applies to owners of passenger vehicles who come to the Republic of Latvia from countries that are part of the European Union or outside its borders. This tax is easy to implement, because Latvia has experience of collecting a similar tax, for example, from owners of cargo transport with a gross weight of more than 3000 kg, and from vehicles registered outside of Latvia, whose owners have declared their place of residence on its territory.
- 4) When zone of optimum will be reached it is advisable to establish a correlation with the vehicle's annual mileage, which can contribute to a fairer principle of charging a vehicle operation tax. When implementing this principle, those who drive less – pay less tax (except for owners of premium and sports cars). Gradation is also possible in terms of vehicle engine capacity. For example, only owners of vehicles with an engine capacity of up to 180 l/s may fall under this proposal, other vehicles are taxed at a fixed rate. Such changes will be inside of the optimum zone, yet they will set fairness as primary criterion, which will lead to decrease of poverty and social stratification.
- 5) A complete rejection of the tax vehicle operation tax by including it in the price of petrol for Latvia is difficult to implement, because an analysis of fuel prices over the past three years shows that fuel prices in Latvia are slightly higher compared to Lithuania and Estonia. This leads to the fact that some car owners refuel their vehicles in these countries. Fixing the value of the annual mileage of vehicles can be carried out both during technical inspection, and using special GPS navigation systems, or using special devices. In this case, it is necessary to regulate the tax on vehicles registered in Latvia, but used in other countries, as well as the cost of creating a system for managing such taxes.

## Bibliography

1. Akhmetshin E.M., Plaskova N.S., Iusupova I.I., Prodanova N.A., Leontyev A.N., Vasilev V.L. (2019). *Dataset for Determining Rational Taxation Value with Incompatible Criteria of Economic Efficiency and Equity*. Data in Brief, Volume 26, 104532, 11 p. <https://doi.org/10.1016/j.dib.2019.104532>.
2. Berzins A. (2017). *BigBank Research - How Much Does the Maintenance of the Used Car Cost in Latvia?* Retrieved: <http://ru.focus.lv/news/issledovanie-bigbank-skoljko-stoit-soderzhanie-poderzhanogo-avto-v-latvii?14999> Access: 25.01.2020.
3. CSB (Central Statistical Bureau) of Latvia. (2020). *Statistical Yearbook of Latvia 2019*. Riga, 228 p.
4. CSDD – Vehicle statistic (2020). Retrieved: <https://www.csdd.lv/transportlidzekli/registreto-transportlidzeklu-skait> Access: 19.01.2020.
5. CSDD – Vehicle by manufacturer (2020). *Visi transportlidzekli, 1900 – 2020, pec razotaja (All Vehicles from 1900 until 2020, by Manufacturer)*. Retrieved: <https://www.csdd.lv/transportlidzekli/transportlidzekli-vizualizacija>. Access: 10.01.2020.
6. Economic Commission for Europe, Inland Transport Committee (2015). *Transport Developments in the European Union Transport Developments, provisional agenda*. Geneva, 20 p.
7. *Enterprise Income Tax Law* (2018). With amendments of 30.01.2020, entry into force: 12.02.2020. Retrieved: <https://likumi.lv/ta/id/292700-uznemumu-ienakuma-nodokla-likums>. Access: 06.01.2020.
8. European Commission (2019). Recommendation for a Council Recommendation on the 2019 National Reform Programme of Latvia and Delivering a Council Opinion on the 2019 Stability. Brussels, 8 p.
9. *How to Control Mileage and Fuel Consumption of a Car Using GPS* (2017). Retrieved: <https://www.loccate.com/blog/control-mileage-and-fuel-using-gps/>. Access: 18.01.2020.
10. Jarczok-Guzy M. (2017). *The Principles of Tax Law Equality in The Context of Direct Taxation*. Journal of Economics and Management / 30, pp. 70-84. 10.22367/jem.2017.30.04.
11. Kharevich G.L. (2017). *About the Free-Rider Problem in Post-Industrial Society*. Interactive science / 9 (19), pp. 73 – 80. doi:10.21661/r-463534.

12. *Law on the Road User Charge* (2014). With amendments of 03.04.2019, entry into force: 13.04.2019. Retrieved: <https://likumi.lv/ta/id/185656-autocelu-lietosanas-nodevas-likums>. Access: 12.01.2020.
13. *Law on the Vehicle Operation Tax and Company Car Tax* (2011). With amendments of 28.07.2017, Entry into force: 01.01.2019. Retrieved: <https://likumi.lv/ta/id/223536-transportlidzekla-ekspluatacijas-nodokla-un-uznemumu-vieglo-transportlidzeklu-nodokla-likums>. Access: 18.01.2020.
14. Leontyev A. (2015). *Usage of Methods of the Variant Optimization for Evaluation of Rational Taxation Amount (Использование методов вариантной оптимизации при определении рациональной величины налогообложения)*. V International, scientific and practical conference of young scientists and students' "Time of challenges and opportunities: problems, solutions and prospects", BSA, pp. 178 – 181.
15. Ministru kabineta rikojums (Order of the Cabinet of Ministers) Nr. 245 (2017). *Par Valsts nodokļu politikas pamatnostādņem 2018.-2021. gadam (On the State Tax Policy Guidelines for 2018-2021 year)*. Retrieved: <https://likumi.lv/ta/id/291013-par-valsts-nodoklu-politikas-pamatnostadnem-2018-2021-gadam>. Access: 14.01.2020.
16. *Natural Resources Tax Law* (2006). With amendments of 14.11.2019, Entry into force: 01.01.2020. Retrieved: <https://likumi.lv/ta/id/124707-dabas-resursu-nodokla-likums>. Access: 12.01.2020.
17. *On Excise Duties* (2004). With amendments of 17.10.2019, entry into force: 19.11.2019. Retrieved: <https://likumi.lv/ta/id/81066-par-akcizes-nodokli>. Access: 16.01.2020.
18. *On Personal Income Tax* (1994). With amendments of 21.03.2019, entry into force: 16.04.2019. <https://likumi.lv/ta/id/56880-par-iedzivotaju-ienakuma-nodokli>. Access: 14.01.2020.
19. *Petrol Availability Rating: Latvia at the Tail End Once Again*. (2019). Retrieved: <https://lv.sputniknews.ru/infographics/20190804/12175310.html>. Access: 18.01.2020.
20. *Regulations Regarding Recycling of End-of Life Vehicles and Environmental Requirements Determined for Treatment Facilities* (2011). With amendments of 12.03.2019, Entry into force: 15.03.2019. <https://likumi.lv/ta/id/226333-noteikumi-par-nolietotu-transportlidzeklu-parstradi-un-apstrades-uznemumiem-noteiktajam-vides-prasibam>. Access: 08.01.2020.
21. Sproģe, I. (2010). *Nodokļu politika ekonomikas attīstības mainīgajos apstākļos (Tax Policy Under Changing Conditions of Economic Development)*. Promocional thesis, University of Latvia, 378 p.
22. *Value Added Tax Law* (2013). With amendments of 28.11.2019, entry into force: 01.01.2020. Retrieved: <https://likumi.lv/ta/id/253451-pievienotas-vertibas-nodokla-likums>. Access: 14.01.2020.
23. Verovska, L., Leontyev, A. (2017). *Use of the Tax Prism Method When Forming Tax Part of the Budget*. Economics and Culture, ISSN 2256-0173, DOI: <https://doi.org/10.1515/jec-2017-0012>. ECONOMICS AND CULTURE 14(1), pp. 128 - 135.
24. Verovska, L., Leontyev, A. (2015). *Using of Variant Optimization Methods for Determination of Rational Taxation Amount*. XVIII International Scientific and Practical Conference "Taxes: Theory and Practice 2015". Republic Czech, Brno, Akademie STING, 7 p.
25. *Za jeden vikend a zdarma. Vyvojari spustili system, za ktery chtel stat utratit 400 milionu (For One Weekend and Free. Developers Launched a System for Which the State Wanted to Spend 400 Million)* (2020). Retrieved: <https://www.novinky.cz/ekonomika/clanek/vyvojari-predstavili-system-zdarma-za-ktery-chtel-stat-utratit-400-milionu-chybi-mu-jedina-funkce-40311233>. Access: 28.01.2020.

## **AGRICULTURAL INVESTMENTS AS THE MAIN FACTOR INCREASING THE AGRICULTURAL SECTOR'S COMPETITIVENESS**

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**Abstract.** Investments in the agricultural sector of Uzbekistan are one of the most important factors of its development. The subject of the research is relations between volume of investments directed into Agricultural sector of the Uzbekistan's economy, its impact to agricultural output in terms of volume of production, food production index and value added indexes. To identify quantitatively above mentioned relations, methods of economic – mathematical modelling are employed in this research

**Key words:** investments, agricultural sector, agricultural output, food production index, value added

**JEL code:** N55, O13

### **Introduction**

Investments play a special role in the development of any sector of the national economy, including the restoration and development of the agricultural sector.

Investments in the agricultural sector are considered to be a valuable tool that contributes to a constant long-term income, since agricultural products have value. This means that investments in the agricultural sector are the most efficient and the most important instrument in the development of the current economy. The Government of Uzbekistan is developing a number of programs to attract investors both local and international to this crucial sector of the national economy. Though there are many declarations that investments are important to increase agricultural production, there is not yet quantitatively based research to demonstrate functional relation between volume of agricultural investments and their impact on agricultural output. The goal of this research is to identify that relation and quantitatively assess impact of investments on agricultural production value in Uzbekistan.

### **Research results and discussion**

In order to diversify production, improve land and water allocation for irrigation, create a favourable agribusiness climate and a high added value chain, support the development of cooperative relations, widely introduce market mechanisms and information and communication technologies in the industry, as well as use science achievements and increase employees' potential (Decree of the President of the Republic of Uzbekistan "On Approving the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020 - 2030 years" No. PD-5853, 23 October 2019.)

The President of the Republic of Uzbekistan Shavkat Mirziyoyev on 24 January 2020 announced the annual message to parliamentarians and the government of Uzbekistan. According to him: "...agriculture, which is one of the most important areas that ensure the growth of the economy, employment and incomes of the population, must be developed on the basis of a strategic approach". In connection with this, measures will be taken to significantly increase production, so that this year to reach the export parameters of fruits and vegetables of USD 2 billion and increase this figure by 3-4 times in the next 5-7 years. In addition, this year the state will spend 3 trillion UZS to the development of horticulture, viticulture, seed production, animal husbandry, agrology, the widespread introduction of water-saving technologies, research and training of qualified personnel for the field.

In order to further improve and develop agriculture, the President of the Republic of Uzbekistan adopted a resolution on 17 April 2018 "on measures to radically improve the system of state management of agriculture and water management". In the resolution, a separate structure is allocated to the management of attracting investment. Earlier, in August 2017, a Centre for implementing investment projects in agriculture and water management was established. It was based on the relevant groups for the development and implementation of investment projects, taking into account the number of employees provided for by loan agreements and relevant Presidential decrees. The main tasks of the centre are:

- participation in attracting foreign investment, soft loans and technical assistance funds (grants), ensuring timely and effective implementation of investment projects in accordance with the principles of project management;
- ensuring the holding of tender (competitive) tenders in the prescribed manner on time, the conclusion of contracts, their examination in authorized bodies;
- monitoring the supply of equipment, materials and the performance of work and services under contracts in accordance with national legislation, international rules and procedures of relevant international financial institutions and foreign government financial organizations.
- Table 1 provides some information regarding agriculture.

Table 1

**The impact of investment on agricultural development**

Years	Investments in Agriculture sector, bln. UZS	Agriculture gross output, bln. UZS	Agriculture, value added, bln .UZS	Food production index, %
2002	102,2	3255.3	2244.2	85.37
2003	98.5	4083.3	2801.8	89.75
2004	113.6	4615.8	3242.3	93.98
2005	138.2	5978.3	4192.8	97.92
2006	164.4	7538.8	5298.0	108.1
2007	200.9	9304.9	6550.2	108.79
2008	261.2	11310.7	7673.0	114.17
2009	385.9	13628.6	9200.0	120.13
2010	531	30856.7	21251.3	126.53
2011	942.5	45285.9	30658.6	135.28
2012	1089.2	55750	36954.6	141.03
2013	1335.6	66435.3	42636.8	151.35
2014	1448	81794.3	53613.2	147.42
2015	1375.5	99604.6	64680.3	159.6
2016	1646.4	115599.2	74779.0	157.08
2017	2004.3	148199.3	90983.9	N/A
2018	3561.1	192699.2	117315.8	N/A

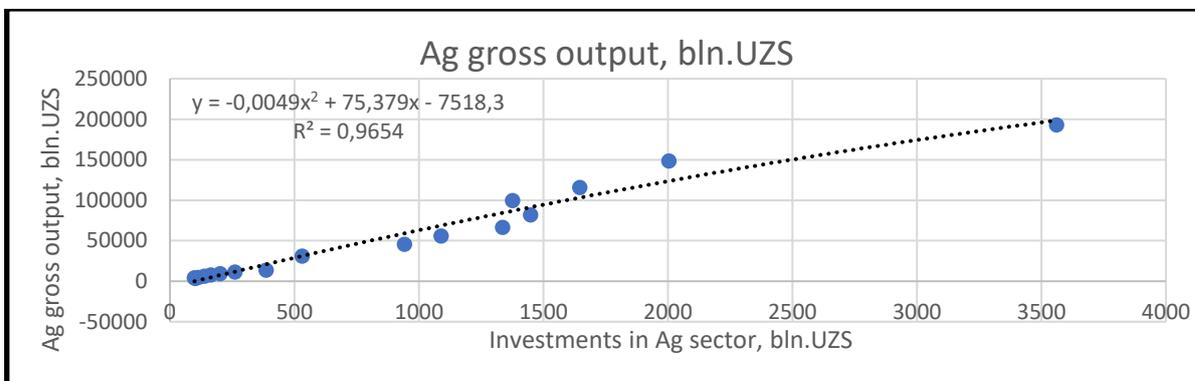
**Source:** author's calculations based on data from [www.stat.uz](http://www.stat.uz) and <https://data.worldbank.org/indicator>

Table 1 shows that the volume of investments in agriculture in 2002 amounted to 102.2 billion UZS, while in 2010 this volume increased 5 times and amounted to 531 billion UZS. In 2018, this amount increased by 6.7 times compared to 2010 and amounted to 3561.1 billion UZS.

Investments in the agricultural sector of Uzbekistan are one of the most important factors of its development. They need all the spheres of agro-industry: industries producing equipment (First agriculture sector), agriculture (Second agricultural sector) and processing industry (the third agricultural sector). Agriculture occupies a special place among the listed areas of the Republic's

agro-industrial complex, since this area produces the initial product for processing industries and ultimately serves as the basis for its stable activity.

Therefore, we analysed the relationship between investment in agriculture and gross agricultural product. While investments in agriculture in 2018 increased by 34.8 times compared to 2002, the total value of gross agricultural output in 2018 amounted to 192699.2 billion sums and increased by 59 times compared to 2002.



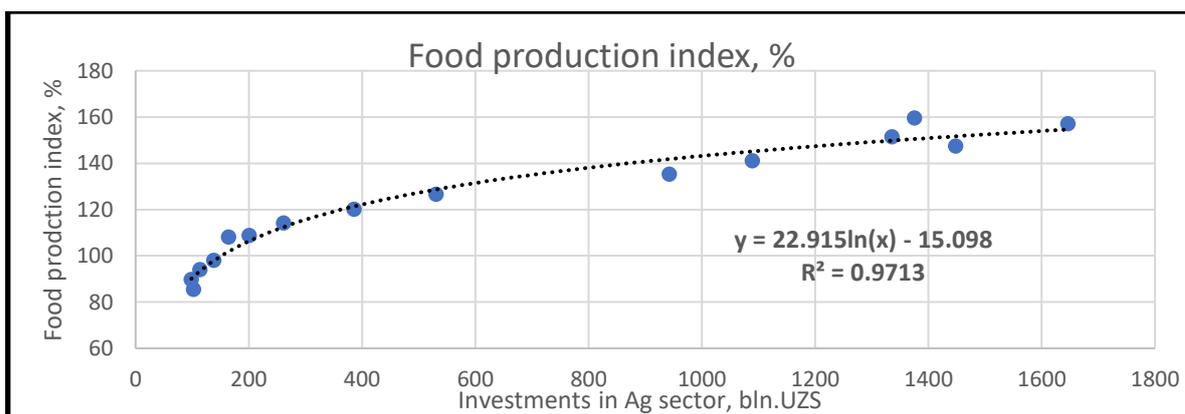
Source: author's calculations based on data from stat.uz

Fig. 1. The economic model of gross output of agriculture

As can be seen from the model in figure1,  $R^2=0.9654$ , that is, there is a strong correlation between investment in agriculture and gross agricultural output.

It should be noted that one of the priority areas for the development of the agrarian sector, an important sphere of the economy of Uzbekistan, is filling the domestic market with food products, achieving self-sufficiency in the field of their production and ensuring food security. The effective implementation of these tasks allows us to solve such social problems as providing the population with jobs, improving the welfare of the population, and improving urban and rural areas. In Uzbekistan, the development and implementation of the state policy on food security is underway, providing for food safety and improving the diet, producing food products in the required quantity.

If we study the relationship between investments in agriculture and food production, we can see that there is a strong correlation between them, because  $R^2=0.9713$  (figure 2).

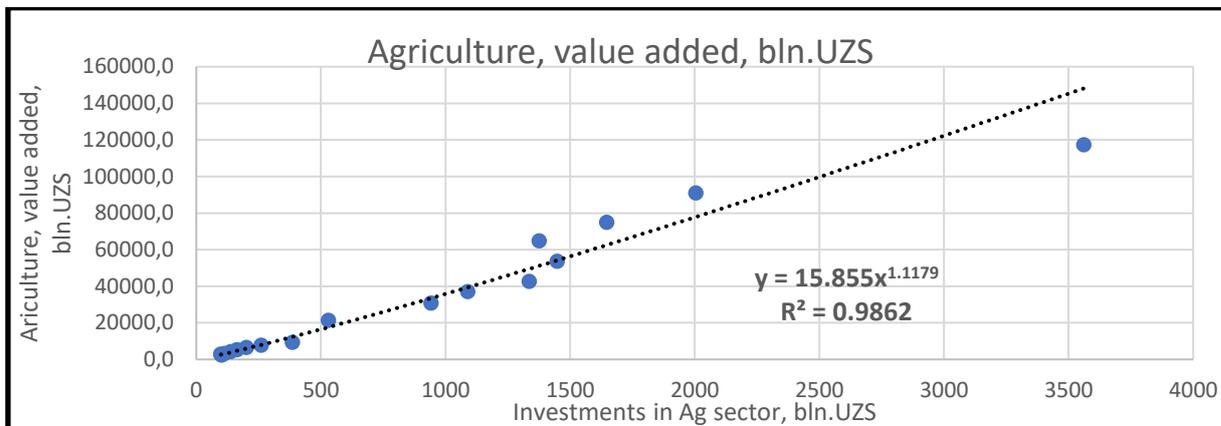


Source: author's calculations based on data from stat.uz

Fig. 2. Economic model of food production index

In Uzbekistan, it is of great importance to create a favourable agribusiness climate and value chain, which provide for the broad implementation of market principles in the purchase and sale of agricultural products, the development of quality control infrastructure, export promotion, and the production of high-value agri-food products that are competitive on target international markets. Below, we compared the relationship between investment in agriculture and value added in

agriculture. The economic model shows a positive result, because  $R^2 = 0.9862$ , the correlation between investment in agriculture and the value chain created in agriculture is very high and this means investment in agriculture is paying off (figure 3).



Source: author's calculations based on data from stat.uz

Fig. 3. Economic model of value added in agriculture

Thus, the results of the quantitative research indicate that there is a strong correlation between volume of the agricultural investments and its impact on production volume, food production index and value added index. Moreover, developed mathematical models demonstrate how investments will quantitatively impact grows of production volume, food production and value added indexes allow to forecast them depending on volume of investments. In other words, it demonstrates that investments into Agricultural sector of Uzbekistan are valuable because it leads to the increase of Agricultural production in general and food production particularly, and more value-added produce as well and thus ensures potential investors including foreign direct investors that agricultural sector is competitive to invest.

### Conclusions, proposals, recommendations

Uzbekistan is encouraging investments into the sector. As market mechanisms, a cluster system has been introduced in the agricultural industry, the accelerated development of such special areas as the creation of modern greenhouse farms, fish farming, beekeeping, poultry farming, and so on, as well as the expansion of the practice of secondary autumn planting of vegetable crops, homestead farming contribute to deep structural reform. All this will attract domestic and foreign investors.

In the agricultural sector of the republic, investments at the state level are important. For the influx of investments at the state level, it is necessary to ensure the formation of a favourable economic market environment. This can be achieved by introducing a management mechanism that takes into account the specifics of the rural industry.

In modern conditions, one of the problems is attracting investors to the agricultural sector of the republic. Attraction of investors, first of all, depends on the investment attractiveness of the object. To determine the investment attractiveness of a particular area in comparison with others, it is necessary to take into account:

- economic potential of the district (natural and climatic conditions, infrastructure etc.);
- indicators of the efficiency of its use (including labour resources, fixed and working capital, fertilizers etc.);
- expected effect of capital investments.

Foreign investors are paying particular attention to legislation in the field of investment. It also takes into account the sectoral features of agriculture, such as the dependence of production on

natural and climatic conditions, high capital intensity, the development of social and industrial infrastructure, the availability of state regulation measures (budget investments, state purchases of agricultural products, tax and credit benefits etc.).

Attracting investment is a difficult task, but it is even more difficult to ensure that it is used effectively. The effectiveness of investment in the agricultural sector is manifested primarily in the growth of labour productivity, increasing the output of gross output, reducing the capital intensity of production etc.

In the conditions in which the agro-industrial complex of the Republic, and especially the regions, is currently placed, the greatest interest is to find investments that contribute to the development of the agricultural sector.

In recent years, some work has been carried out in the direction of reforming the country's agriculture, in particular, improving the public administration system, widespread introduction of market relations, strengthening the legal foundations of relations between entities producing, processing and selling agricultural products, attracting investments to the industry, and introducing resource-saving technologies, as well as providing agricultural producers with modern equipment.

Modern approaches to solving urgent problems related to investing in the agricultural sector of the Republic can provide conditions for stable, efficient, rational, and expanded reproduction of the agricultural sector. Thus, in order to further develop the investment potential in the agricultural sector of the Republic, it is necessary to improve the existing forms and methods of investment. The proposed options for the development of the existing system of financing investments in agriculture are aimed at successfully solving current problems, and suggest that agricultural producers reach a qualitatively new level of investment activity that ensures cost-effective production.

## **Bibliography**

1. Decree of the President of the Republic of Uzbekistan "On approval of the development strategy of agriculture of the Republic of Uzbekistan for 2020 - 2030" No. PD-5853, 23 October 2019. Retrieved: lex.uz
2. Kovalenko N.Ya. et al. Agricultural Economics. M.: Yurkniga, 2009. Agricultural Economics: Textbook. allowance / ed. V.T. Vodyannikov. M. Koloss, 2008. 388 p.
3. Message from the President of the Republic of Uzbekistan Shavkat Mirziyoyev Oliy Majlis 01/24/2020. Retrieved: <http://uza.uz/ru/politics/poslanie-prezidenta-respubliki-uzbekistan-shavkata-mirziyeev-25-01-2020> Access: 17.02.2020
4. Maksumkhonova A.M. Investments as a factor in the development of the agricultural sector of the Republic of Uzbekistan // Bulletin of Science and Education No. 2 (56). Part 2 2019.p. 40-43.
5. Main indicators of social and economic development of the Republic of Uzbekistan for 2000-2019. Retrieved: <https://stat.uz/en/181-ofytsyalnaia-statystyka-en/2806-quarterly-reports> Access: 21.01.2020
6. Table "Main indicators of agriculture" 2000-2018. Retrieved: [www.stat.uz](http://www.stat.uz) Access: 17.12.2019
7. Resolution of The President R. Uz. 17.04.2018 no. III1-3671 "on measures for organizing the activities of the Ministry of agriculture of the Republic of Uzbekistan". Retrieved: lex.uz Access: 25.10.2018

## **FINANCIAL SPECULATION IMPACT ON AGRICULTURAL COMMODITY PRICE VOLATILITY: TGARCH APPROACH**

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**Abstract.** Motivated by agricultural commodity price fluctuations and spikes in the last decade, we investigate whether financial speculation destabilizes the price of agricultural commodities. The aim of this research is to assess the impact of financial speculation on agricultural commodity price volatility. In our study we use weekly returns on wheat, soybean and corn futures from Chicago Mercantile of Exchange. To measure this impact, we apply autoregressive conditional heteroskedasticity (ARCH) technique. We also propose a model with seasonal dummy variables to measure if financial speculation impact on price volatility differs among seasons. The results of our research indicate that financial speculation as an exogenous factor has either no effect or reduces the volatility of the underlying futures prices. Therefore, we conclude that the increase of non-commercial market participants does not make the agricultural commodity prices more volatile or this link is at least questionable.

**Keywords:** financial speculation, agricultural futures, price volatility, commodity futures markets.

**JEL code:** C58, G13, Q02

### **Introduction**

Agricultural commodity exchange markets are used to distribute the price risk between agricultural producers and consumers. In the last two decades, major commodity exchange markets became more open to index funds and other investors that do not participate in the underlying agricultural activities. On the one hand, this indicates speculative activity that can potentially affect the prices and cause bubbles. On the other hand, these investors provide the necessary liquidity for these markets to function. The problem whether financial speculation (best described by index funds' net positions) distorts the prices of agricultural commodities have drawn a lot of attention in the recent academic literature. Although many of these studies differ in price measures and other variables used, there is no consensus among authors if financial speculation makes the commodity markets more unstable (Haase et al., 2016). Many authors argue that an increase in non-commercial positions does not disrupt agricultural commodity markets, nor it causes spikes in price levels. Etienne et al. (2017) who used Granger causality tests to analyse Chicago Board of Trade wheat, soybean, and corn markets between 2004 and 2015, provide little evidence that grain futures prices experienced large and prolonged bubbles and that the index investments were causing them. Similar results were achieved by Sanders and Irwin (2010) who used regression models to analyse the relationships between futures returns and long positions of index fund investors in twelve US agricultural commodity markets between 2006 and 2008. On the other hand, these studies lack the emphasis on price volatility and its modelling. A study by Dawson (2015) highlights a high volatility persistence and structural breaks in London International Financial Futures and Options Exchange wheat futures prices between 1996 and 2012. However, it is not clear whether the change in volatility structure is a result of financial speculation. Therefore, the aim of this research is to assess the impact of financial speculation on agricultural commodity price volatility. To achieve this, we first describe the methodology to measure the price volatility and financial speculation, then we analyse the underlying impact of financial speculation on volatility and its clustering.

The complex and non-linear relationships between variables requires advanced techniques in order to achieve more detailed results. Many studies on commodity futures markets use

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autoregressive conditional heteroskedasticity (ARCH) approach (Gupta and Rajib, 2012). According to Silveira et al. (2017) ARCH methods allow to model financial data which do not follow a normal distribution. ARCH methods are primarily used to forecast volatility in futures markets. However, these models can also be used to explain the factors responsible for volatility and its clusters. In our research we apply modified ARCH techniques to estimate the impact of financial speculation on the volatility of prices. Another important factor within agricultural markets is the seasonality as prices become more volatile prior to harvest times (Karali and Thurman, 2010). Therefore, we also add seasonality to our modelling to see if the effect of financial speculation differs among seasons.

## Methodology

Our research consists of three models: preliminary generalized autoregressive conditional heteroskedasticity (GARCH) model, main threshold generalized autoregressive conditional heteroskedasticity (TGARCH) model and a proposed TGARCH model that uses financial speculation as a multiple seasonal variable. We start our analysis by defining the variables for all three models. First, we generate price return series as the natural log of futures prices:

$$R_t = \ln\left(\frac{P_t}{P_{t-1}}\right) * 100. \quad (1)$$

where:  $R_t$  is price returns on futures,  $P_t$  is futures price,  $t$  is time period,  $\ln$  is natural logarithm.

To measure financial speculation in agricultural commodity markets we apply Working T index of excess speculation (Working, 1960). The Working's T index measures the excess of non-commercial positions (index funds positions) relative to commercial positions (agricultural producers' and consumers' positions) and is used in the research on futures markets (Buyuksahin and Robe, 2014). The value of this index cannot be less than 1. If it is equal to 1, then all positions in the market are commercial. According to the methodology originally described by Working (1960), we generate a time series of speculative activity index:

$$T_t = \begin{cases} 1 + \frac{SS_t}{HL_t + HS_t} & \text{if}(HS_t \geq HL_t), \\ 1 + \frac{SL_t}{HL_t + HS_t} & \text{if}(HL_t > HS_t). \end{cases} \quad (2)$$

where:  $T_t$  is working T index for financial speculation,  $SS_t$  are non-commercial short positions,  $SL_t$  are non-commercial long positions,  $HS_t$  are commercial short positions and  $HL_t$  are commercial long positions,  $t$  is time period.

Next, we perform a test if time series are stationary. In ARCH modeling stationary time series are required in order to obtain consistent parameter estimates (Buyuksahin and Robe, 2014). We perform Augmented Dickey-Fuller test if the data used in our research is stationary -  $H_0$ : unit root is present;  $H_1$ : alternative hypothesis. Next, we define our preliminary model with 1 time period AR lags GARCH (1,1). ARCH models consist of two segments: mean and variance equations. We place speculation index in our variance equation:

*Mean equation:*

$$R_t = \alpha_0 + \alpha_1 R_{t-1} + u_t. \quad (3)$$

*Variance equation:*

$$h_t^2 = \beta_0 + \beta_1 u_{t-1}^2 + \beta_2 h_{t-1}^2 + \beta_3 T_{t-1}. \quad (4)$$

where: the mean equation consists of returns  $R_t$  as an autoregressive process with parameters  $\alpha_0$ ,  $\alpha_1$  and an error term  $u_t$  with a variance of  $h^2$ . The conditional variance  $h_t^2$  is provided in the variance equation, where  $\beta_0$  is the constant,  $\beta_1 u_{t-1}^2$  is the residual (ARCH) effect,  $\beta_2 h_{t-1}^2$  is the variance

(GARCH) effect. We also use an external variable  $\beta_3 T_{t-1}$  in the variance equation to assess the direct effect of speculation index on conditional volatility.

As an extension to our previously described GARCH model, we use a Threshold Autoregressive Conditional Heteroskedasticity (TGARCH) approach for our main model. In this approach a binary variable is added to estimate the negative return impact on volatility and whether this relationship is asymmetric (Hadsell, 2006). In order to assess the seasonal volatility, time seasons are also added to the variance equation. To avoid multicollinearity, we only use 3 seasons: spring, summer and autumn. Next, we specify our main model based on TGARCH methodology proposed by Zekoian (1994):

*Mean equation:*

$$R_t = \alpha_0 + \alpha_1 R_{t-1} + u_t. \quad (5)$$

*Variance equation:*

$$h_t^2 = \beta_0 + \beta_1 u_{t-1}^2 + \beta_2 h_{t-1}^2 + \beta_3 T_{t-1} + \beta_4 u_{t-1}^2 d_{t-1} + \beta_5 DP_{t-1} + \beta_6 DS_{t-1} + \beta_7 DA_{t-1}. \quad (6)$$

where:  $\beta_4 u_{t-1}^2 d_{t-1}$  is the asymmetric component, the parameter  $d_t = 1$  if  $u_{t-1} < 0$  and  $d_t = 0$  otherwise. If  $\beta_4 \neq 0$ , then a threshold effect exists, when  $\beta_4 > 0$ , the return impact on volatility is asymmetric.  $\beta_5 DP_{t-1}$  is the seasonality parameter to measure the effect of spring,  $DP_t = 1$  if time period  $t$  is spring and  $DP_t = 0$  otherwise.  $\beta_6 DS_{t-1}$  is the summer effect.  $\beta_7 DA_{t-1}$  is the autumn effect. Other parameters described in preliminary model (formula 3 and 4).

We also propose an alternative TGARCH model with an additional variable to model financial speculation as a multiple component with seasonal dummy variable. This model allows to assess the season weighted financial speculation and its impact on price volatility. We select spring as the most volatile season for agricultural futures markets. Next, we specify our proposed model:

*Mean equation:*

$$R_t = \alpha_0 + \alpha_1 R_{t-1} + u_t. \quad (7)$$

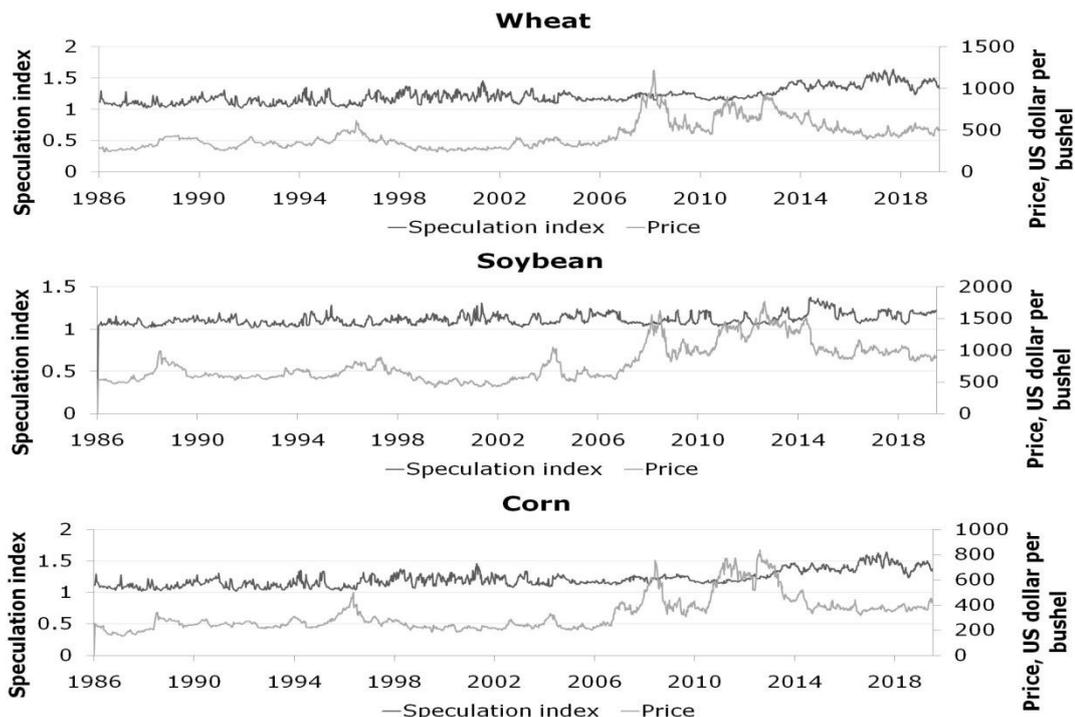
*Variance equation:*

$$h_t^2 = \beta_0 + \beta_1 u_{t-1}^2 + \beta_2 h_{t-1}^2 + \beta_3 T_{t-1} + \beta_4 u_{t-1}^2 d_{t-1} + \beta_5 DP_{t-1} + \beta_6 T_{t-1} DP_{t-1}. \quad (8)$$

where:  $\beta_6 T_{t-1} DP_{t-1}$  is the multiple effect of speculation index  $T_{t-1}$  and season spring effect  $DP_{t-1}$ . Other parameters described in preliminary and main model (formula 3, 4, 5 and 6).

## Data

In our research we use weekly data for wheat, corn and soybean continuous contracts from Chicago Mercantile of Exchange. The prices for these commodity futures are quoted in US cents per bushel. In our research we cover the time period from January 1986 to July 2019. In total, our analysis covers 1563 weekly observations. We use data on commercial and non-commercial positions to generate the time series of Working T index of speculative activity (Figure 1).



Source: author's calculations based on Chicago Mercantile Exchange data, 2019

Fig. 1. Prices and speculation index for wheat, soybean and corn futures (January 1986–July 2019)

## Research results and discussion

We start our analysis by providing descriptive statistics for wheat, corn and soybean futures from Chicago Mercantile of Exchange (Table 1). We split our time series into two subsamples covering, respectively, 1986–2002 ( $n=698$ ) and 2003–2019 ( $n=865$ ). The volatility of returns described by standard deviance is larger in the time period of 2003–2019 for all three agricultural commodities. Jacque-Bera test results meet the significance criteria of  $q$ -value  $<0.05$  and thus show that sample data have the skewness and kurtosis matching a normal distribution.

Table 1

### Descriptive statistics of weekly price returns of agricultural commodity futures

	Wheat			Soybean			Corn		
	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019
Mean	0.03	0.01	0.05	0.03	0.01	0.05	0.03	-0.01	0.07
Median	-0.07	-0.06	-0.10	0.14	0.09	0.21	0.00	0.00	0.05
Minimum	-17.18	-17.18	-15.78	-24.19	-24.19	-21.20	-19.98	-19.98	-17.68
Maximum	18.78	18.78	16.84	13.94	13.94	11.34	21.23	20.91	21.23
Std. deviation	3.93	3.50	4.25	3.38	3.24	3.49	3.89	3.71	4.03
Skewness	0.29	0.35	0.26	-0.56	-0.57	-0.56	-0.10	-0.25	-0.01
Kurtosis	1.49	2.99	0.73	3.98	6.24	2.57	4.13	6.07	2.94
Jacque-Bera	167.6**	273.3**	28.9**	1113.0**	1169.8**	282.6**	1115.5**	1077.0**	310.9**

Notes: Estimates with  $p$ -value less than 0.05 are flagged with one asterisk (\*), with  $p$ -value less than 0.01 are flagged with two asterisks (\*\*).

Source: author's calculations based on Chicago Mercantile Exchange data, 2019

Our next step is to test the hypothesis for data stationarity. We provide estimates for ADF statistics for each commodity used in our study (Table 2). Hypothesis  $H_0$  of unit root can be rejected for both returns and speculation in all cases, except for speculation index of wheat (-2.93) in 2003–

2019. The results confirm that further ARCH technique is appropriate for modelling volatility of selected time series.

Table 2

**Augmented Dickey Fuller Test**

	Wheat			Soybean			Corn		
	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019
Price	-2.57	-2.53	-2.49	-2.90	-3.00	-2.03	-2.96	-2.95	-2.11
Return	-40.41**	-27.01**	-30.04**	-40.03**	-12.30**	-28.87**	-18.35**	-25.59**	-15.82**
Speculation index	-4.68**	-7.18**	-2.93	-8.47**	-8.39**	-4.76**	-7.75**	-5.81**	-5.74**

Notes: Estimates with p-value less than 0.05 are flagged with one asterisk (\*), with p-value less than 0.01 are flagged with two asterisks (\*\*).

Source: author's calculations based on Chicago Mercantile Exchange data, 2019

In order to measure the time-varying impact of speculative activity on agricultural futures price volatility, we provide estimates for the preliminary GARCH (1,1) model (Table 3). All three commodities have highly significant volatility (GARCH) effects implying volatility clusters. Residual (ARCH) effect is present in all cases except for whole sample of wheat (0.0744) and corn (0.0632) in 2003–2019. The existence of volatility clustering allows the further modelling of exogenous factors for futures price volatility. However, speculation index is a significant explanatory factor only in case of corn futures (-0.0214 with p-value less than 0.05 in 1986–2019, -0.0363 with p-value less than 0.01 in 2003–2019, Table 3). However, negative estimate of financial speculation indicates that financial speculation has a reverse effect and reduces the price volatility of corn futures.

Table 3

**Preliminary GARCH model estimates for agricultural commodity returns**

Period	Wheat			Soybean			Corn		
	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019
<b>Mean Equation</b>									
constant	-0.0113	-0.0233	-0.0107	0.0701	0.0387	0.0955	0.0910	0.0430	0.1699
Return	-0.0163	-0.0203	-0.0118	-0.0338	-0.0397	-0.0177	-0.0269	-0.0155	-0.0372
<b>Variance Equation</b>									
constant	0.0038	0.0913	0.0390	0.0136	0.0018	0.0251*	0.0332**	0.0297	0.0503**
Residual	0.0744	0.1388**	0.1148**	0.1387**	0.1721**	0.1089**	0.1167**	0.1621**	0.0632
Volatility	0.8754**	0.4254**	0.7826**	0.8084**	0.7329**	0.8418**	0.8273**	0.7714**	0.8877**
Speculation index	0.0031	-0.0331	-0.0157	-0.0061	0.0079	-0.0164	-0.0214*	-0.0178	-0.0363**

Notes: Estimates with p-value less than 0.05 are flagged with one asterisk (\*), with p-value less than 0.01 are flagged with two asterisks (\*\*).

Source: author's calculations based on Chicago Mercantile Exchange data, 2019

Next, the asymmetry and seasonality effects are obtained through the estimation of the threshold generalized autoregressive conditional heteroskedasticity (TGARCH) model which is used as the main model for our research. Table 4 results indicate the presence of volatility clusters in both soybean and corn returns as residual and volatility estimates are highly significant similarly to the results of our previous model. The effect of financial speculation on volatility is only present in corn (-0.0120 with p-value less than 0.05 in 2003–2019). The further results suggest that there is a strong evidence for an asymmetric effect of volatility shocks of soybean (-0.6100 with p-value less than 0.01 in 2003–2019) and wheat (-0.5355 with p-value less than 0.01 in 2003–2019). The asymmetry effect in corn futures was only present between 1986 and 2002 (-0.4366 with p-value less than 0.01). However, in all cases the asymmetry estimate is negative, meaning that a positive return increases volatility at a greater extent than a same size negative return. Dummy variables for seasonality indicate that returns on futures prices were significantly more volatile during spring compared to other seasons.

However, the only exception is soybean futures that were also volatile during summer (0.0054 with p-value less than 0.01 in 2003–2019).

Table 4

**Main TGARCH model estimates for agricultural commodity returns**

Period	Wheat			Soybean			Corn		
	1986–2019	1986–2002	2003–2019	1986–2019	1986–2002	2003–2019	1986–2019	1986–2002	2003–2019
<b>Mean Equation</b>									
<b>constant</b>	0.0038	-0.0848	0.0700	0.1560**	0.0978	0.1935	0.1708**	0.1332	0.2207**
<b>Return</b>	-0.0280**	-0.0244	-0.0242	-0.0373	-0.0494	-0.0094	-0.0519*	-0.0141	-0.0606**
<b>Variance Equation</b>									
<b>constant</b>	0.0011	0.0055	0.0023	0.0012	0.0027	0.0009	0.0003	-0.0004	0.0145
<b>Residual</b>	0.0405**	0.0375	0.0476	0.0489**	0.0402**	0.0534**	0.0430**	0.0336**	0.0409**
<b>Volatility</b>	0.9550	0.9453**	0.9461**	0.9511**	0.9492**	0.9494**	0.9594**	0.9606**	0.9470**
<b>Asymmetry</b>	-0.3652*	-0.0529	-0.5355**	-0.5913**	-0.6393**	-0.6100**	-0.2438	-0.4366**	0.0958
<b>Speculation index</b>	0.0004	-0.0030	0.0000	-0.0010	-0.0017	-0.0012	-0.0013	-0.0004	-0.0120*
<b>Spring</b>	0.0048**	0.0061**	0.0047**	0.0033**	0.0039**	0.0029*	0.0104**	0.0115**	0.0096**
<b>Summer</b>	-0.0013	0.0004	-0.0021	0.0047**	0.0045*	0.0054**	0.0004	0.0004	0.0021
<b>Autumn</b>	-0.0022	-0.0025	-0.0005	-0.0031**	-0.0040**	-0.0019	-0.0016	-0.0020	-0.0008

**Notes:** Estimates with p-value less than 0.05 are flagged with one asterisk (\*), with p-value less than 0.01 are flagged with two asterisks (\*\*).

**Source:** author's calculations based on Chicago Mercantile Exchange data, 2019

Next, Table 5 shows the results of our proposed modified TGARCH model that includes the product of seasonal dummy variable and financial speculation. An estimate for the ARCH processes indicates similar results as in previous models, the volatility and residual effects are present in all cases except for wheat. The asymmetry between returns and volatility is present and negative in soybean and wheat futures in time period after 2003. The product of financial speculation and seasonal dummy variable has a statistically significant and negative effect on volatility in wheat (-5.4768 with p-value less than 0.01 in 1986–2002) and soybean (-1.9046 with p-value less than 0.01 in 1986–2019, -2.0884 with p-value less than 0.05 in 2003–2019). However, in case of wheat the non-multiple speculation effect was also significant but positive (1.2722 with p-value less than 0.01 in 1986–2002). This can indicate that an increase in non-commercial positions reduces the volatility during more volatile spring season.

Table 5

**Proposed TGARCH model estimates for agricultural commodity returns**

	Wheat			Soybean			Corn		
Period	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019	1986-2019	1986-2002	2003-2019
<b>Mean Equation</b>									
constant	-0.0006	-0.0692	0.0499	0.1474**	0.0812	0.1620	0.1689**	0.1289	0.2088*
Return	-0.0277	-0.0280	-0.0207	-0.0235	-0.0375	0.0002	-0.0500*	-0.0074	-0.0606*
<b>Variance Equation</b>									
constant	-0.3498	-1.2307*	1.0732	-0.4197	-0.4989	-0.7707	-0.2379	-1.0537	1.1668
Residual	0.0390**	0.0159	0.0622	0.0399**	0.0402**	0.0297*	0.0421**	0.0356**	0.0393**
Volatility	0.9537**	0.9496**	0.9160**	0.9644**	0.9556**	0.9779**	0.9601**	0.9571**	0.9539**
Asymmetry	-0.4445*	-0.6814	-0.4675*	-0.5972**	-0.4869*	-0.9071*	-2.2576	-0.4237*	0.0892
Speculation index	0.3362	1.2722**	-0.4670	0.2838	0.3924	0.5597	0.0520	0.8344	-1.0102
Spring	2.2654*	7.3280**	-1.2809	2.7780**	3.2436	2.8739**	2.3437**	5.4632**	0.7818
Speculation * Spring	-1.2763	-5.4768**	1.4042	-1.9046**	-0.2121	-2.0884*	-1.0347	-3.7467	0.2074

**Notes:** Estimates with p-value less than 0.05 are flagged with one asterisk (\*), with p-value less than 0.01 are flagged with two asterisks (\*\*).

**Source:** author's calculations based on Chicago Mercantile Exchange data, 2019

In the following, we conclude that realized futures return can be modelled by using ARCH techniques. Time series are stationary, both residual and volatility effects are present in most of cases. Furthermore, we estimate a negative asymmetry effect meaning that an increase in returns is more related to further increase in volatility than vice versa. Our preliminary GARCH model indicates that the presence of financial impact on agricultural futures volatility is only present in corn. However, this impact is negative, meaning that an increase in non-commercial futures positions reduces the underlying price volatility. Similar results are present in our main TGARCH model, only corn futures have a significant but negative effect on volatility. The main model also allows to assess the effect of seasonality on futures price volatility indicating that all agricultural commodities were more volatile during spring, soybean futures were also volatile during summer. In our proposed modified TGARCH model the negative effect of season weighted financial speculation on volatility is mostly present in soybean futures. The effect of financial speculation on wheat is positive and statistically significant, however, the effect is negative for season weighted financial speculation and was only present during time period of 1986–2002. Eventually, we are unable to find the destabilizing effect of financial speculation on underlying futures price volatility. Our study gives the following results: financial speculation as an exogenous factor either had no effect or reduced the volatility or increased the volatility only in time period before 2003. The further investigation on financial speculation impact on price volatility can be expanded by using months instead of seasons, more detailed time periods, also involve more commodity futures.

**Conclusions, proposals, recommendations**

- 1) In our research we analyse the volatility of three agricultural commodities, adopting extended autoregressive conditional heteroskedasticity (ARCH) models. We use realized weekly returns on wheat, soybean and corn futures from Chicago Mercantile of Exchange. The results from analysis show that time series are stationary and include volatility clustering, thus further modelling of exogenous variables using ARCH techniques is available. In our research we also indicate that futures prices are more volatile during spring as compared to other seasons.

- 2) The results of our main and preliminary model analysis show that financial speculation impact on volatility is only present in corn futures. However, this effect is negative, meaning that the increase in non-commercial positions is associated with lower price volatility. In addition, our proposed threshold autoregressive conditional heteroskedasticity (TGARCH) model with financial speculation as multiple factor with seasonality shows that speculation impact on volatility is present in soybean futures but is also negative.
- 3) The results of our research have important policy implications. Financial speculation is a concern for regulators of futures commodity exchanges to apply a limit on non-commercial positions. Our analysis similarly to other authors indicates that the influence of financial speculation on price level and price volatility in the agricultural markets is at least questionable or in some cases can be opposite as an increase in non-commercial positions can be followed by less volatile prices. However, we also provide evidence that non-commercial positions can make the price more stable or reduce the volatility during the more volatile spring periods.

## References

1. Buyuksahin, B., Robe, M. A. (2014). Speculators, Commodities and Cross-Market Linkages. *Journal of International Money and Finance*, Volume 42, pp. 38-70.
2. Commitment of Traders, 2019 (2019). Retrieved: <https://www.cmegroup.com/tools-information/quikstrike/commitment-of-traders.html> Access: 30.08.2019.
3. Dawson, P. J. (2015). Measuring the Volatility of Wheat Futures Prices on the LIFFE. *Journal of Agricultural Economics*, Volume 66, Issue 1, pp. 20-35.
4. Etienne, X. L., Irwin, S. H., Garcia, P. (2017). New Evidence That Index Traders Did Not Drive Bubbles in Grain Futures Markets. *Journal of Agricultural and Resource Economics*, Volume 42, Issue 1, pp. 45-67.
5. Gupta, S. K., Rajib, P. (2012). Samuelson hypothesis & Indian commodity derivatives market. *Asia-Pacific Financial Markets*, Volume 19, Issue 4, pp. 331-352.
6. Haase, M., Zimmermann, Y. S., Zimmermann, H. (2016). The Impact of Speculation on Commodity Futures Markets—A Review of the Findings of 100 Empirical Studies. *Journal of Commodity Markets*, Volume 3, Issue 1, pp. 1-15.
7. Hadsell, L. (2006). A TARARCH Examination of the Return Volatility–Volume Relationship in Electricity Futures. *Applied Financial Economics*, Volume 66, Issue 1, pp. 893-901.
8. Karali, B., Thurman, W. N. (2010). Components of Grain Futures Price Volatility. *Journal of agricultural and resource economics*, Volume 35, Issue 2, pp. 167-182.
9. Silveira, R. L. F., dos Santos Maciel, L., Mattos, F. L., Ballini, R. (2017). Volatility Persistence and Inventory Effect in Grain Futures Markets: Evidence from a Recursive Model. *Revista de Administracao*, Volume 52, Issue 4, pp. 403-418.
10. Sanders, D. R., Irwin, S. H. (2010). A Speculative Bubble in Commodity Futures Prices? Cross-Sectional Evidence. *Agricultural Economics*, Volume 41, Issue 1, pp. 25-32.
11. Working, H. (1960). Speculation on Hedging Markets. *Food Research Institute Studies*, Volume 1, Issue 2, pp. 185-220.
12. Zakoian, J. M. (1994). Threshold Heteroskedastic Models. *Journal of Economic Dynamics and control*, Volume 18, Issue 5, pp. 931-955.

## **PERSPECTIVES AND OPPORTUNITIES OF GEORGIAN FINANCIAL MARKET INTEGRATION INTO EU**

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**Abstract.** Full integration of the financial market with Europe is a necessary requirement of a market economy. The circulation of financial resources between different countries of the world creates opportunities for the growth of the economy of each of them, as the share of foreign investments both inside the country and abroad increases. The ability of developing countries to integrate with Europe is limited because of their economic situation. The aim of this paper is to identify the obstacles and opportunities that hinder or facilitate the integration process. One of the reasons for the inadequate extent of liberalization of financial flow is the inadequate development of the financial market. The main financial institutions that are promoting the flow of funds in the financial market under the guidance of the European Association Agreement directives are primarily development oriented, although the socio-economic situation impedes the implementation of certain directives or the proper success is not achieved. The inflow of foreign investment into the Georgian economy is not problematic, although only one-way movement of financial resources cannot ensure full integration. Especially the initial phase of European directives involves the movement of finances through the opening of branches in European countries. In the article, the economic growth achieved before and after the European Association Agreement in the development of the financial markets will be an indicator of the opportunities and prospects for European integration. The empirical analysis method is used for the evaluation, the role of banking and insurance institutions in the development of the stock market has been studied, problems have been identified and recommendations have been formulated to improve the financial market.

**Key words:** European directive, Banking institution, Insurance institution, Stock market.

**JEL code:** G1, G21, G22, G23

### **Introduction**

The integration of the financial market with Europe implies the liberalization of financial flow. This is a vital source for boosting the economy of a developing country, as it promotes foreign investment within the country and beyond. The development of the financial market at the level of one country requires passing through several stages: 1) Creation of financial institutions based on the need to move the country's financial resources; 2) Attracting foreign investment to expand financial globalization; 3) Development of financial instruments created; 4) Liberalization of financial operations (Tsintsadze., Phutkaradze, 2017). The development of global financial markets using financial instruments that were created in the 1990s, when the post-Soviet countries did not even have the rudiment of an independent financial market, has ended. Consequently, European integration proceeded at a slow pace. The main purpose of the article is to identify the opportunities for European integration, based on the assessment of the development of the financial market. To this end, the consequences of the Agreement on the European Association and statistics on the economic development of financial institutions will be studied, on the basis of which we can discuss the possibilities and prospects of European integration. Using empirical analysis, the article identifies trends in the country's financial market development, comparing it with the level of development of financial institutions in European countries and outlines opportunities and problems associated with the implementation of the association directives in relation to both market development and European directives. The information sources used includes the data of the Organization for Economic Co-operation and Development, and the National Statistics Office Georgia, and the National Bank of Georgia.

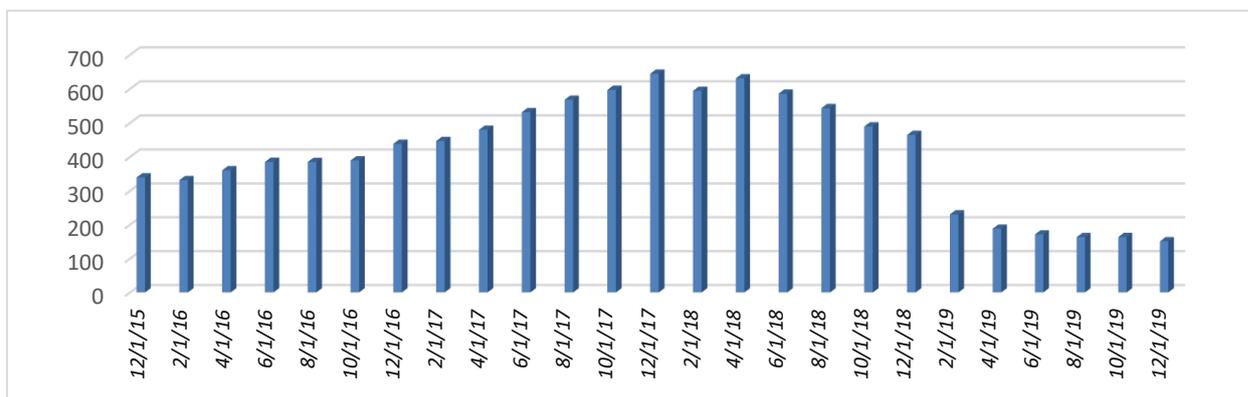
The issues of integration of financial markets have been analysed in papers published in 1973 (McKinnon, 1973 and Shaw, 1973). Both scholars disapproved of the policy of restricting financial markets, believing that this policy would result in a shortage of financial resources as well as a non-optimal distribution of financial resources across sectors. Both authors acknowledged that this approach caused low economic growth in developing countries in the 1950s and 1960s and that liberalization of financial markets would lead to increased investment, which in turn would contribute to economic growth. Researchers from Asian countries take different approach to European integration. "It is argued that the European way cannot be directly emulated into the Asian case. Heterogeneous economic conditions, historical, and political regimes mean that the approaches must differ between the two regions. Small Asian economies are confronted with susceptible capital flows, which implied economic stability" (Kumari Selvarajan, Ab-Rahim, 2020). We agree with the authors that perfect financial integration cannot be achieved under different political interests, but it is an inevitable process, as confirmed in the same paper. "Financial Integration and Economic Growth: Should Asia Emulate Europe? is inevitable, and now it is only a question of time and pace."

Theoretical and practical studies prove that the banking and insurance sectors and the stock market play a vital role in ensuring the key function of the financial market - the reproduction of financial resources, providing the market with temporary free resources, thereby creating an opportunity for investment. (Tsintsadze, Vashakmadze, Tavadze, Meloyan-Phutkaradze, 2019).

#### Research findings and discussion

Over the past two years, the National Bank of Georgia has developed, improved, and implemented numerous regulations, which in the short term will slow down retail lending, increase expenditures in the sector, increase capital demand and reduce profitability in the short term. In the long run, we should hope that this will contribute to a qualitative improvement in the financial system of Georgia, which will ultimately ensure the financial stability of the banking system. In particular, the change in lending rules for individuals set rigid boundaries to financial sector, which led to significant changes in lending procedures. Lending without an in-depth analysis of solvency has stopped. There is no uniform methodology for estimating the excessive lending. Important criteria that can give us an idea of its scale is the share of inactive loans in the banking sector. According to these criteria, Georgia has one of the lowest rates in Europe and in the region, per IMF's information it is 2.7 % of total bank lending. For comparison, many European countries have several times larger overdue loans (Denmark - 4.2 %, Ireland - 9 %, Italy - 9.8 %, Russia - 10 %, Portugal - 11 %). The International Monetary Fund (IMF) downgraded its forecast for economic growth in Georgia. According to a statement released by the Fund's mission in Georgia in 2019, it amounted to 5.2 %, which exceeds the IMF's forecast of 4.6 %. That is below the forecast of 4.78 % of October 2018 by 0.18% percentage point. The growth outlook for 2020 is stable and the growth forecast is 4.3 %. According to the IMF, one of the main risks of economic growth is changes in the rules for lending to individuals.

From January 2019, new banking regulations came into force and banks were restricted from lending to citizens without a detailed analysis of their income. In addition, the income groups were defined and the maximum loan ratio was set for each group. A year after this change, the Georgian government is working to amend them. As it is known, bank regulations are expected to soften by March, which means that thousands of citizens will have access to loans.



Source: National Bank of Georgia (interactive statistics)

Fig. 1. Consumer Loan (thousand GEL)

As the diagram shows, among individual loans, the short-term consumer loans are most reduced. In December 2019, the volume of consumer loans issued in monetary form, decreased by 74.23 %, from 586,055 GEL thousand to 151,005 GEL.

A reduction in lending automatically means a decrease in the amount of disposable free funds, which leads to a decrease in total local demand. Demand reduction in turn has a negative impact on business sector revenues and the expenses incurred / to be incurred by them. As a result, economic activity and growth rates decline in the short term.

According to a statement by the International Rating Company Fitch, dated February 22, 2019, it was this regulation that became one of the factors that contributed to the improvement in credit ratings.

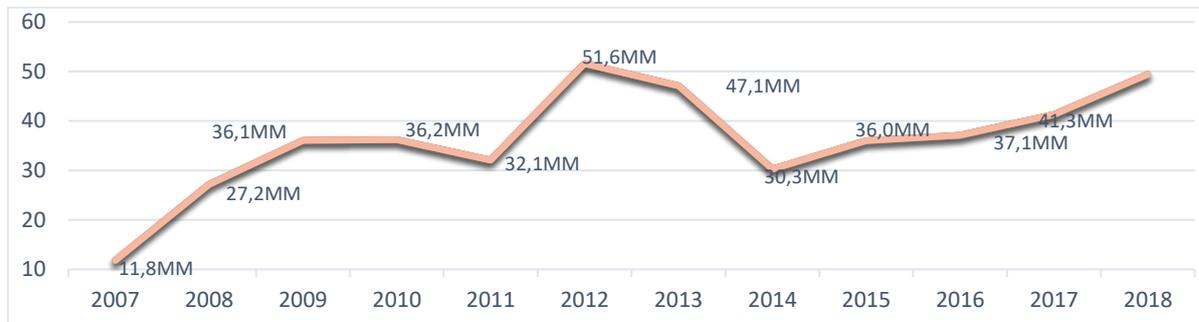
Even when looking at the same profitability statistics, in 2019 no negative effects are observed. In particular, banks maintained a fairly high level of profitability. Net annual income increased by 34 %, and interest income increased by 12 %. Thus, banks were not affected by the regulations.

Over the past six years, individual loans have increased from 15 % to 40 % in respect of GDP. At the same time, lending growth rates were also quite high compared to the economic growth rates. In particular, over the past 3-5 years, annual credit growth has been above 20 %. If debt grows faster than its servicing ability, within a few years it will inevitably cause severe problems for borrowers, the financial sector and the economy as a whole.

Compared to other countries, Georgia has a softer approach to income verification. In particular, banks have the right to take into account incomes from the informal sector, as was the case before the regulation, which is quite rare in international practice. According to world practice, the insurance sector plays an important role both in providing credit resources and in developing the stock market. It is therefore important to study the dynamics of development for each.

The development of the single insurance market in the EU was carried out gradually under the directives developed in 1973, 1988 and 2002. The directives adopted in Georgia in 1973, 1988 and 2002 could not be implemented because of the simple reason that the country was a member of the USSR. The affirmation of European values in the Georgian insurance market dates back to the creation of the European Economic Community on 18 December 1989, which was expressed in support of the independence of Georgia. This became the basis for the creation of the first private insurance company "Aldagi" from the very beginning of independence, the initial capital of which was created through contributions from Georgian and foreign partners. It has already become a precedent for the insurance market to develop in the footsteps of the European insurance market. The harsh

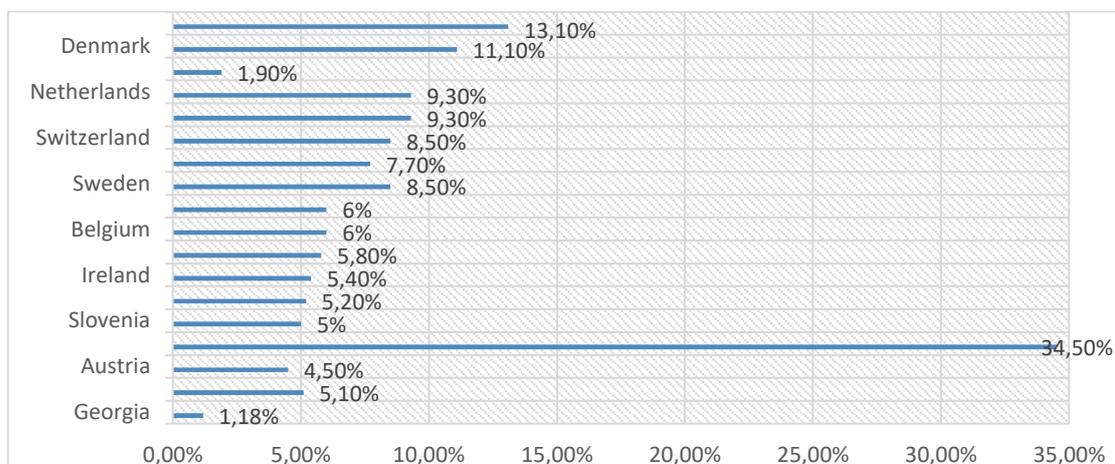
socio-economic conditions on the path to development made it difficult to implement the directives set for the insurance market. The first step was the creation of a supervision service, which served as the basis for the development of regulatory laws and legal acts. In parallel mode, the launch of market development measures and economic development programs in the country allowed the gradual implementation of European integration directives of 1973, 1988 and 2002. The purpose of this article is to assess the quality of integration in relation to the development of the insurance market, the main indicator of which is the amount of premium attracted.



Source: LEPL Insurance State Supervision Service of Georgia, <https://www.insurance.gov.ge>

Fig. 2. Premiums Attracted in the Insurance Market 2017-2018

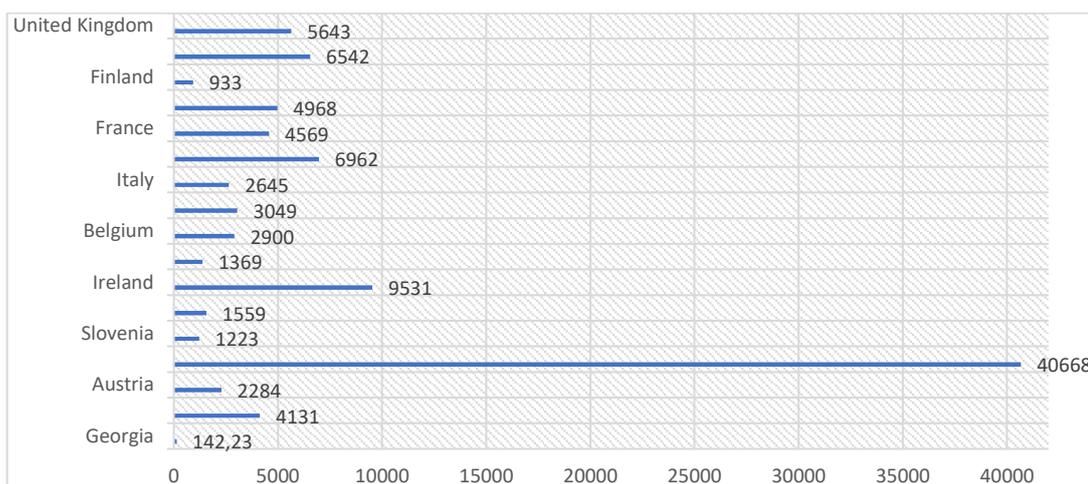
The diagram shows that the volume of attracted premiums is not steadily increasing. The reason for this is excessive politicization. Specifically, in 2012, the new government's policy reduced the monopoly on the market and allowed companies to operate in free competition (which is one of the requirements for European integration). The reduction in premiums attracted since 2013 is driven by the introduction of the Universal Healthcare Program. This regulation, on the one hand, brought the country closer to European values in relation to the protection of human rights, and on the other hand, stimulated the development of insurance companies by introducing new insurance products (LEPL Insurance State Supervision Service of Georgia, 2018). Health insurance was one of the most vital products for existence of the companies. In terms of product diversity, the Georgian insurance market is still far from the European market due to low incomes, low risk awareness and low insurance culture. Accordingly, the share of the insurance sector in GDP is very low (1.18 %) compared to European countries, as evidenced by the value of the penetration rate of insurance on this chart.



Source: ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT; LEPL Insurance State Supervision Service of Georgia 2018

Fig. 3. Insurance penetration: Europe and Georgia, 2018

Is there a problem with complying with insurance supervision rules? Given that the rules of supervision are fully consistent with the rules of European countries, there are no problems in this regard, but the main thing is not only compliance with the rules, but also regulation of factors conducive to development, such as population income growth, the introduction of compulsory insurance in some areas, tightening control over compensation for losses, as unreasonably uncompensated losses, prolonging the duration of disputes further undermines trust in insurance companies. The second indicator that can be used to estimate population involvement in the development of insurance is the density of insurance.



Source: ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT; LEPL Insurance State Supervision Service Of Georgia, 2018

Fig. 4. Density of insurance: Europe and Georgia, 2018

In this case Georgia has the lowest rate of per capita insurance premium. Apart from the problems mentioned above, life insurance is underdeveloped. The increase in risky life insurance from 1.57 % to 6.9 % for the study period is due to the requirement of the banking sector, which obliged the borrower to insure his/her life to minimize risks. Providing funds to the financial market can be achieved not at the expense of risky life insurance, but at the expense of accumulated life insurance. Therefore, it is obvious that in Georgia, where the accumulated life insurance is in its infancy, the role of the insurance market in the development of the financial market is accordingly small (*LEPL Insurance State Supervision Service of Georgia, 2007-2018*). The circle of problems that hinder the full integration of the insurance market with the European insurance market is as follows: 1) Low insurance culture of the population; 2) Neglect of the expected risks by both the legal entities and individuals; 3) Underdeveloped accumulated life insurance; 4) The problem of placing free reserves of insurance companies in high-yield securities due to the underdeveloped stock market, consequently leading to low investment return of the companies. The amount of premium attracted is directly related to the number of contracts. The authors argue that, along with all other problems the development of the insurance business is hampered by the weak regulation of loss reimbursement process for emerging insurance cases. "The insurance contracts in highly regulated countries cost 74 per cent more than the contracts in the least regulated countries: consumer protection seems to be very costly." (Finsinger, 1992).

The above problems prevent insurance companies from directly participating in the financial market, limiting themselves to the placement of free reserves in bank deposits. According to the latest data, financial resources placed on bank deposits make up 60-70% of insurance reserves, resulting in an investment return of 3.8% of total income. One of the important directives of the

Association Agreement with Europe is the introduction of the solvency margin methodology. The Solvency I requirement (on the publicity of liability and reporting, risk management and capital adequacy) has been fulfilled in Georgia since 2011. As for the Solvency II Directive, it can be implemented from 2020, which is preceded by a gradual increase in regulatory capital in both the insurance and reinsurance sectors. The situation of the financial institutions reviewed confirms that the share of securities market in the country is not much developed (Tsintsadze, Meloyan-Phutkaradze, 2018).

In Georgia, the stock market, where large volume of securities should be traded permanently, is virtually frozen. Although, with the support of the US government, the best American experts in this field from USAID in 1998-2000 laid the foundation for the securities market. In their Law on the Securities Market, the securities industry was separated from its natural competitor - the banking sector, to give the newly established securities market mechanism a real opportunity to develop independently. Under this legislation, in 1998-2000, the basic infrastructure of the securities market (the Georgia Stock Exchange, the Central Securities Depository of Georgia, up to 12 independent registrars) was created and launched, up to 40 brokerage companies were created and commissioned etc. The securities market in Georgia was gradually gaining ground in 2000-2007. However, amendments to the law on the Securities Market, which took place in 2007-2008, discredited the securities market.

- It became possible to trade without an exchange market, with more than 95% of the transactions being traded outside the exchange market in a nontransparent and non-competitive environment. This has led to a loss of investor confidence in both the securities market and the entire market. This will ultimately lead to a significant drop in market liquidity.
- The independent regulator was called off, and control over the securities was transferred to the National Bank. The priority of the National Bank is always commercial banks and it is less interested in the development of free exchange trading.
- Commercial banks were allowed to buy a controlling stake in the stock market. Finally, banks own more than 50% of the stock exchange and, according to the charter, have the majority of votes among decision-makers. This allows them to run processes independently, at their discretion.
- It should also be noted, based on the foregoing, what role does the insurance market play in the development of the stock market, if any. As the analysis shows, the share of accumulated life insurance is almost zero, therefore companies do not have long-term financial resources that could participate in investing in securities traded on the stock market. Accordingly, it acts as a mechanism for distribution of shares between companies and not a mechanism for investing.

Notwithstanding the foregoing, it should be noted that the steps taken by the National Bank of Georgia and the Government in developing the securities market, which the Association Agreement requires from the state, are not insignificant.

- 1) In 2017, part of the amendments to the Tax Code entered into force, which introduced tax exemptions for the taxation of loan and equity financial instruments. Under the first amendment package, capital gain is not taxed, which encourages secondary market activity. In addition, coupons for corporate bonds issued before 2023 will not be taxed, and dividends paid on shares will be deducted from the source of payment.
- 2) Since 3 December 2018, the National Bank of Georgia and Company "Montran" have implemented an integrated securities settlement system GSSS, which is used to issue, store, repay and pledge government and private securities. Despite the fact that a little over a year has passed since the

introduction of the system, it has already attracted the attention of participants from central banks and capital markets from around the world and has been highly appreciated by various experts on the international infrastructure market. And on 7 February 2020, the CENTRAL BANKING Award was presented to the National Bank of Georgia and the "Montran" Company for this innovation. The award ceremony will be held on March 19 th in Brussels, Belgium, by CENTRAL BANKING.

3) Draft Law on the Development of Derivatives Market, developed by the National Bank in cooperation with the European Bank for Reconstruction and Development (EBRD) was adopted by the Parliament of Georgia on 20 December 2019. It will regulate the operations of created instruments, determine the netting ability of derivative parties and the use of financial mortgage.

In addition, the National Bank of Georgia is actively promoting the development of the debt securities market. Namely, by a decision of the National Bank of Georgia, in 2014, commercial banks were allowed to use GEL-denominated corporate debt obligations to provide refinancing loans. As a result, demand of commercial banks for these product has increased significantly. In 2014, as part of the de-dollarization strategy, the National Bank of Georgia allowed international financial institutions to issue GEL-denominated debt obligations. Since December 2016, the National Bank of Georgia has launched a new one-month open market monetary policy instrument.

As a result of these approaches, the volume of debt securities in the market has increased significantly, and growth continues. Along with monetary market instruments, the government debt securities market also plays an important part in the development of the corporate bond market. Over the past few years, the volume of government debt securities in the market has increased.

According to the NBG, foreign debt securities issued by companies operating in Georgia by November 2019 exceeded 7 billion GEL, most of which comes from financial sector and state-owned companies (80 %). In addition, more than 91 % of the bonds are denominated in foreign currency.

Georgia holds a leading position among the following European countries in terms of the share of issued debt securities in GDP: the Czech Republic, Slovakia, Turkey, Estonia, Hungary, Russia, Slovenia, Poland, Bulgaria, Croatia, Latvia, Lithuania, Romania, Ukraine. The debt securities market has grown almost 2.8 times since 2014. The largest share of the emission falls on bonds issued abroad by corporations and treasury bonds (52 % and 35 % of the market, respectively).

The treasury securities market facilitates the mobilization of local and international investors. The development of this market segment, is an important prerequisite for the development of corporate bonds, which is also proved by international experience. And this, in case of sufficient development of the capital market, liquidity and existence of investor market, indicates a potential for market growth. Indeed, the above problems hinder the development of the securities market and, accordingly, its share in the country's GDP is 6 % and is listed on the next-to-last position among the given European countries.

Thus, the state plays a major role in the development of the securities market in developing economies. The securities market is an indispensable and important element of the global economy without which a sustainable development of the economy is not possible.

### **Conclusions and recommendations**

As a result of the study, problems of integration of the main players of the financial market with Europe were identified and recommendations were developed. Namely: A reduction in lending automatically means a decrease in the amount of disposable free funds, which leads to a decrease

in total local demand. Demand reduction in turn has a negative impact on business sector revenues and the expenses incurred / to be incurred by them. As a result, economic activity and growth rates decline in the short term. Based on the above, we consider, that the recommendations made by the European Association Agreement in the short term will lead to a slowdown in retail lending, but in the long run it will contribute to the qualitative improvement of the Georgian financial system, which will ensure the financial sustainability of the banking system.

The circle of problems that hinder the full integration of the insurance market with the European insurance market is as follows: 1) Low insurance culture of the population; 2) Neglect of the expected risks by both the legal entities and individuals; 3) Underdeveloped accumulated life insurance; 4) The problem of placing free reserves of insurance companies in high-yield securities. To achieve full integration, we will consider: 1) Introduction of the mandatory form for certain types of insurance (business property, professional liability, accumulated life and healthcare, all types of vehicles); 2) Development of stock market; 3) We believe that in order to accelerate the integration of developing countries with Europe, the Association Agreement should incorporate not only development directives in a particular area, but also recommendations for creating the basis for development, such as, for Georgia: overcoming unemployment, raising the minimum wage in order to raise living standards to a moderate level. Then it would be possible to free the state from social spending, and the introduction of compulsory insurance would be justified.

The problems that arose as a result of unjustified amendments to the Law on Securities Market led to discreditation of the market that was on the path of development, which affected: 1) Quitting the stock market by participating companies; 2) The complete disappearance of some large companies as a result of the 2008 Russian-Georgian war; 3) A small share of the insurance market in the history of securities market development due to underdeveloped life insurance; 4) Assigning a dominant role to the commercial banks in the stock market.

We believe that elimination of the problems identified in the development of the financial market can be achieved through the improvement of the legislative framework, which implies that stock exchange institutions will be fully capable to comply with the directives under the European Association Agreement.

## Bibliography

1. *Bank of Georgia - Ratings Navigator*. Retrieved: <https://www.fitchratings.com> Access: 15.01.20
2. *Financial Sector Assessment Program (FSAP)*. Retrieved: <https://www.imf.org/en/Countries/GEO> Access: 23.01.20
3. Joaquin Maudosa, Juan Fernandez de Guevara. (2015). The Economic Impact of European Financial Integration: The Importance of the Banking Union. *The Spanish Review of Financial Economics*. Vol.13. Issue 1. pp. 11-19
4. Jorg Finsinger, (2019). European Market Integration and the European Insurance Industry: Reasons for Trade, Barriers to Entry, Distribution Channels, Regulation and Price Levels, Tax Harmonization and Financial Liberalization in Europe pp 225-261.
5. *LEPL Insurance State Supervision Service of Georgia*. Retrieved: <https://www.insurance.gov.ge> Access:23.01.20
6. Mckinnon, R. I. (1973). *Money and Capital in Economic Development*. Washington, D. C.: Brookings Institution.
7. *Organisation for Economic Co-operation and Development*. Retrieved: <https://stats.oecd.org/Index.aspx?QueryId=25444> Access: 02.02.20
8. Phutkaradze, B., Tsintsadze, A., Phutkaradze Z. (2019) Financial Integration and Economic Growth: Empirical Evidence from the Republic of Georgia. *European Journal of Sustainable Development* 8 (2),pp. 232-232.
9. *Regulations Implemented according to the Retail Lending*. Retrieved: <https://www.nbg.gov.ge/index.php?m=726> Access: 05.02.20
10. Selvarajan S.K, Rossazana A, (2020), Financial Integration and Economic Growth: Should Asia Emulate Europe? Vol. 35, No. 1, pp. 191-213.

11. Shaw, E. (1973), *Financial Deepening in Economic Development*. New York: Oxford University Press.
12. Stiglitz, Joseph (2004). "Capital-Market Liberalization, Globalization, and the IMF," *Oxford Review of Economic Policy*, Vol. 20, No. 1, pp. 57-71.
13. Tsintsadze, A., Meloyan-Phutkaradze, L.(2017). Empirical Analysis of Development of Insurance Field. *Scientific letters of academic society of Michal Baludansky*, 5, pp. 146-149.
14. Tsintsadze, A., Oniani, L., Ghoghoberidze, T. (2018) Determining and Predicting Correlation of Macroeconomic Indicators on Credit Risk caused by Overdue Credit , *Banks & bank systems*, Issue13, Iss. 3, pp. 114-119.
15. Tsintsadze, A., Vashakmadze, I., Tavadze, I., Meloyan-Phutkaradze, L.(2019). New Regulations in the Development of a Financial Market. *American Journal of Fundamental, Applied & Experimental Research* 12 (1), pp. 96-101.
16. Vashakmadze, I., Glonti, V.(2018). Deposit Insurance, as the Basis for Ensuring Financial Sustainability of the Banking System. *Journal of Applied Finance and Banking* 8 (5), pp. 43-52.
17. Vashakmadze, I., (2018). Problematic Loan Management in Georgian Commercial Banks. *Ukraine-EU. Innovations in education, technology, business and law*, p. 334.

## **RURAL DEVELOPMENT AND ENTREPRENEURSHIP**

## **SOCIAL ENTREPRENEURSHIP AS A TOOL FOR THE DEVELOPMENT OF NON-GOVERNMENT ORGANIZATION'S ACTIVITIES: A CASE STUDY OF THE ASSOCIATION "ORANZAIS STARS"**

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**Abstract.** In Latvia, de-institutionalization is gradually taking place, which is envisaged in the European Social Development Plan at the level of public policy. In Latvia, the non-governmental sector (NGO) sector is largely dependent on external funding. In addition, competition for external financing is increasing. One of the solutions to reduce the effect of external financing is to engage in economic activity. Social entrepreneurship is becoming increasingly popular in Latvia - a business model that allows economic activities to be carried out without losing the mission, goals and social impact of NGOs. Social entrepreneurship is a way of effectively addressing the concerns of different groups at risk of social exclusion, which can have a positive long-term impact on the development of both the city and society itself. Social entrepreneurship has the potential to solve various social problems, thus facilitating municipal work and reducing municipal budget expenditures. For municipalities, social enterprises are a tool for solving social problems, which allows them to solve social problems in the municipalities by using a trans-regional approach, without taking risks on investments, failure, changes in market demand. The aim of the study is to create scenarios for the development of NGO activities, using the example of Association "Oranzais stars" (Orange Ray). Main research methods used: monographic method, strategic analysis and planning methods - PEST, SWOT, VRIO matrix, scenario method. The main result of the methods applied in the thesis is the development of a suitable and sustainable business model as the society moves towards the implementation of social entrepreneurship.

**Key words:** social entrepreneurship, NGO, de-institutionalization, persons with mental disabilities, community-based social services.

**JEL code:** I38, G30

### **Introduction**

Social entrepreneurship is increasingly being promoted in Latvia. Social entrepreneurship addresses a specific social problem and measures social impact. Social entrepreneurship can be a small, grassroots initiative implemented in the common interest to solve social problems and, over time, employing classic business methods in its economic activity, with a particular emphasis on measurable positive social impact (Social entrepreneurship [s.a.]). Until now, non-governmental organizations (NGOs), acting in the interest of the public and its groups, have played an important role in addressing social issues and are not profit-making.

In Jelgava city, primary education services for children and young people with mental disabilities are provided for only nine years. Consequently, there is a problem and a vital need to provide young people with mental disabilities (hereinafter referred to as MD) between the ages of 15 and 29 with community-based services where they can spend their leisure time, integrate and receive psychosocial help. At the same time, it would provide support in solving the psychosocial problems of these young people, as well as educational and social rehabilitation services for the restoration or improvement of social functioning abilities, thus ensuring the restoration of social status and integration into the society. Establishing a support service for young people with MD aged 15-29 in Jelgava will simultaneously address a number of social issues - employment and education of the target group, provision of social services, as well as support to reduce the risk of social exclusion in families with children and young people with mental disorders. The research aim is to create scenarios for the development of NGO activities, using the example of Oranzais Stars Association. To achieve

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the aim the following specific research tasks are set: 1) study theoretical aspects of social entrepreneurship; 2) find out the normative regulation of social entrepreneurship in Latvia; 3) analyse the activities of NGOs (example of "Oranzais stars"), environment and resources, provide strategic and developmental evaluation of activities; 4) develop scenarios for starting a social business by establishing and developing services for persons with severe MD living in Jelgava and Jelgava municipality. **Materials and methods:** Combined research approach using qualitative approach - document analysis, questionnaire survey, monographic method, strategic analysis and planning methods - PEST, SWOT, VRIO matrix, scenario method. The target group of the survey are legal representatives of children with disabilities. The population consists of 82 persons. Total number of respondents is 30.

### **Research results and discussion**

An innovative, interdisciplinary, form of future business - these are some of the most commonly used terms to describe social entrepreneurship. While some predict this to be the business model of the future, some claim that this is a very ancient practice, since similar traits were observed in the work of the medieval guilds, even more so in the Rocdale pioneer movement of 1844 to work together for a common social purpose. In the case of Rocdale pioneers, it was a response to rising poverty among traders who worked in the traditional trade sector but were threatened by the Industrial Revolution (Doherty, 2009). Here are the hallmarks of 21<sup>st</sup> century social entrepreneurship - responding to the needs of society to which the state is not responding or responding too sluggishly or unsuitably. Social enterprises are thought to have emerged as a reaction to market or public sector problems in providing public services. The emergence of social entrepreneurship has also been driven by increased competition for external funding in the non-governmental sector (Dobele, 2013). This is also confirmed by the current situation in Latvia. The Satversme (Constitution of the Republic of Latvia) stipulates that Latvia is a socially responsible state, but the fact that Latvia is still one of the poorest member states of the European Union indicates that the Latvian state is not able to fulfil the requirements of the Satversme (Latvijas Republikas Satversme, 1922, Dobele, 2013). It is revealed by indicators compiled by the Central Statistical Bureau of Latvia, which characterize poverty and social exclusion in Latvia and the European Union. The informative review indicates that in 2017 Latvia had the sixth highest proportion of people at risk of poverty or social exclusion, i.e., 28.4 % of the population was at risk of poverty or social exclusion, leaving behind Bulgaria, Romania, Greece, Lithuania, Italy. Moreover, in 2018, the most common problem faced by the Latvian population is low income and its unequal distribution, which is the reason why people are at risk of poverty (Nabadzibas risks..., 2019). There is currently no common definition of social entrepreneurship in the European Union. This term is often used to refer to the principles and forms of entrepreneurship that involve starting a business to achieve social and environmental goals (Social entrepreneurship, [s.a.]).

In Latvia, social entrepreneurship is regulated by the Law on Social Enterprises of the Republic of Latvia, which stipulates that "Social enterprise is a limited liability company which has been granted the status of a social enterprise in accordance with the procedure specified in this law which carries out economic activities with a positive social impact" (Sociala uzņemuma likums, 2018). According to the Cabinet of Ministers Regulations No. 173 of 01.04.2018 "Regulations on the Groups at Risk of Social Exclusion and the Procedure for Granting, Registration and Supervision of the Status of a Social Enterprise", a number of indicators are determined for the evaluation of a social enterprise.

Cabinet of Ministers Regulations No. 173 (01.04.2018) "Regulations on the Groups of People at Risk of Social Exclusion and the Procedure for Granting, Registering and Monitoring the Status of a Social Enterprise" defines groups of people at risk of social exclusion that are essential for social entrepreneurship. The Cabinet of Ministers of the Republic of Latvia has issued the following Cabinet Regulations related to the Law on Social Entrepreneurship, which additionally regulate the issues related to the Law: 1) Cabinet Regulation No. 173 of 27 March 2018, Regulations on the Groups at Risk of Social Exclusion and the Procedures for the Granting, Registration and Monitoring of Social Business Status; 2) Cabinet Regulation No. 101 of 20 February 2018, Regulations on the Social Enterprises Commission; 3) Cabinet Regulation No. 197 of 3 April 2018, Regulations on the Conditions of Granting Commercial Aid to Social Enterprises and the Procedures for Granting Aid; 4) Cabinet Regulation No. 467 of 11 August 2015 Operational Program for Growth and Employment implementing measures of 9.1.1. specific objective "Increase labour market integration of disadvantaged unemployed" for 9.1.1.3. 'Support for social entrepreneurship'.

Association "Oranzais stars" is a non-governmental organization whose core business is non-profit making and its specificity is different from that of other forms of business. It is a voluntary association formed for the purpose of achieving the non-profit objective of the articles of association. However, the association has the right to carry out economic activities in order to achieve the goals of the association and use the proceeds only for the purpose stated in the articles of association (Biedribu un nodibinājumu likums, 2003). The organization was founded on 5 October 2009 for an indefinite period of time with the aim of providing support to families with children with disabilities and children with special needs.

Analysing the financial data of the association, it is concluded that the specifics of the organization significantly influence its financial results. Often, the NGO sector in Latvia uses external funding to organize its activities, i.e. donations, municipal grants, project financing etc. Citizens form NGOs and engage in them for a variety of reasons - the desire to improve one area of public life by seeing the opportunity to contribute to what the public sector has to offer in a given area by raising public awareness of a particular area. In the field of social services, NGOs offer a variety of alternative care services, helping those groups who are unable to take care of themselves, improving the quality of life of certain sections of the population, providing psychological and material support etc. (Parskats par NVO..., 2011).

To investigate the internal and external environment of an organization's operations, a SWOT analysis was performed on the significance of the factors, identifying the impact of the factors on the organisation's performance and revenue. "Creating quality community-based social services" stands out as an important opportunity. One of the most important prerequisites for further development is the "development of quality community-based social services". Unfortunately, 'EU funding for social projects and tendering for social services' is of little importance. But the most important threat to the development of the organization is "low solvency of the target group". On the other hand, when evaluating the data obtained from the PEST analysis, it is concluded that political and economic factors have both positive and negative effects on the performance of the organization. The operation of the organization is significantly influenced by national tax policy, binding legislation and regulations, service requirements, the political situation in the social sphere and increased competition for external financing. Strategic Capability Analysis of Association "Oranzais stars" with the VRIO Matrix demonstrates the impact of the organization's internal environment on the organization's performance, indicating that: 1) the organisation's long-term competitiveness benefits

include: professional staff, recognition, and NGO business potential; 2) a similar competitive advantage is: *experience, customer-oriented service design and information resources, including extensive networking*. Based on the organisation's diverse resources and skills, the organization can build competitive advantage on the basis of superior innovation and customer satisfaction. To do this, the resources available to the organization - the assets, information and knowledge of the organization - must be used. With these resources, the organization can create and implement strategies. The skills, which are the knowledge, abilities and attitudes required for the successful operation of an organization in a particular sector, play a key role in creating a competitive advantage. Collecting data from the analysis of organizational performance, 3 scenarios of organizational development were identified: new product development, social business start-up, niche strategy.

Table 1

**Advantages and disadvantages of the development scenarios of Association "Oranzais stars"**

<b>Strategy</b>	<b>Advantages</b>	<b>Disadvantages</b>
<b>New service development strategy</b>	Free market, Cooperation with NGOs, Cooperation with recognizable persons, Technical support, Material resources	Competition, Narrower consumer base, Limited market capacity
<b>Change of the form of activity (starting a social business)</b>	Solving the social problem (community based services and employment promotion), Financial stability, Operational development	Bureaucratic burden, Need to attract investors or seed capital, Lack of knowledge
<b>Focusing strategy</b>	Niche Advantage, Loyalty, Company Recognition	Inflexibility, Strength of Suppliers, High Cost

Source: authors' Study, 2020

As a result of the research, it was concluded that Jelgava city lacks community based services (CBS) for children with functional disabilities and their families. The results of the study show that in order for both parents to continue working in paid employment, to be economically active in Latvia, and to promote the integration of these families into society and to ensure their well-being, Jelgava City Council must provide care and employment for the young people with MD who no longer receive education. In Latvia, *the number of consumers in the social sphere is increasing*. This is evidenced by the fact that in the period from 2010 to 2018 the proportion of students with special needs integrated (including those of special classes) in the total number of students with special needs (% per school year) has increased 2.65 times. Likewise, the number of persons with disabilities who received the services of an assistant provided by the municipality during the reporting year increased by 3.39 times during the reporting year from 2013 to 2018 (Socialas politikas raditaji, 2019).

Table 2

**Defining of the target group of Association "Oranzais stars"**

No	Name of the responsible authority	Number of persons with functional disabilities living in Jelgava city and Jelgava district	Target group that needs a day care centre
1.	Jelgava Education Board	No data	30 young people with MD
2.	Zemgale Planning Region (DI project)	In Jelgava, out of 235 children, individual needs assessment was performed for 58 children with functional disorders; of the 95 children in Jelgava district, 58 children were assessed for individual needs	In Jelgava there are 15 children with functional disorders, in Jelgava district - 20 children with functional disorders
3.	Jelgava Social Affairs Board and Jelgava District Social Service	No data	No data
4.	Medical Commission on Expertise in Health and Work Ability	There are 232 disabled persons aged 16-29 living in Jelgava and 1 disabled person aged 16-29 living in Jelgava district	In Jelgava and Jelgava district the total number of persons with MD aged 16-29 is 88 persons
5.	Centre for Disease Prevention and Control	There are 104 patients with psychiatric and behavioral disorders living in Jelgava and 101 patients with psychiatric and behavioral disorders diagnosed in Jelgava district	In Jelgava and Jelgava district the total number of persons with MD aged 16-29 is 82 persons

Source: authors' Study, 2020

Based on the above, it is concluded that the data provided by the authorities on the number of persons with MD (16-29 years) varies. The difference in data is assumed to be due to differences in the accounting of the data and to the competence of the authorities providing the information. The assumption is that the target group of the study is 82 persons aged 16-29 living in Jelgava and Jelgava district. A survey was conducted to evaluate the aspects of setting up a day care centre and the views of legal representatives of young people with disabilities. Survey results show that one third of respondents hire a carer or assistant from their family budget. In addition, 90 % of respondents find it very important for a young person to continue receiving an education or day care centre after leaving primary school, however, 43 % of the surveyed legal representatives say that children's functional disorders make it difficult to pursue further education. Analysing the data on the functional disorders of the children of the respondents, it is concluded that 56.7 % are children with mental disorders, 16.7 % children have physical impairments and 26.6 % - combined functional disorders. The results of the survey show that 86.7 % of respondents' children attend an educational institution and 14.3 % do not attend either an educational institution or a day care centre (DCC). Respondents reveal that they are children over the age of 16 who no longer receive education and also do not attend a DCC, as there is currently no such service in Jelgava and Jelgava district and, accordingly, it is not available to the families.

On the basis of the analysis of the activities of the "Oranzais stars" association, it is concluded that the association is recommended to establish a new company and register its activities in the registers of social enterprises and social service providers, thus increasing access to public funding for both business start-ups and service payments. Developing social entrepreneurship within the association would primarily reduce the high impact of external funding on organizational performance and increase financial stability, while addressing a number of social challenges. Using the problem tree model, the social problem was identified and the relationship between the cause and the various factors affecting it identified. Identifying a problem allows a more reliable explanation of the problem to potential stakeholders. Consequence identification, in turn, allows the cause of the problem to be identified (Enabling inclusive cities..., 2017). **Key issue:** young people with severe MD do not have access to community-based social services. **The root causes:** 1) persons with severe functional disabilities need continuous care; 2) successful family functioning requires appropriate services -

educational and social. **Consequences:** 1) exposure to poverty risk; 2) unemployment (both young and old); 3) risk of social exclusion; 4) burnout of parents and risk of physical and mental illness.

As a legal entity, the Association may establish a limited liability company (hereinafter "Ltd"), a limited liability company (minimum share capital of 2800 EUR), which must be registered in the Commercial Register in order to start a business (Komerclikums, 2000). The next step is the registration of the newly established Ltd in the social enterprise register to obtain the status of a social enterprise (decision of the shareholders' meeting and decision of the Ministry of Welfare on recognition of the status of a social enterprise). The social business model is based on three main components - beneficiary, measurable social impact and profit. The authors developed 3 development scenarios for care and employment of young people with MD aged 15-29 living in Jelgava.

**Development Scenario 1: Social enterprise "Day care centre where the municipality purchases services"** - a social service is created - a day care centre for persons with severe MD from the age of 15. The service is offered by the newly established social enterprise in cooperation with Jelgava municipality.

Table 3

**Advantages and disadvantages of development Scenario 1  
 "Social enterprise DCC where municipality purchases services"**

No	Advantages	Disadvantages
1.	Social security. Creating a system to make society feel good while living in its territory.	There is a possibility that in the future the municipality may not financially support the establishment of DCC, besides there is a high risk that the municipality may prioritize another social problem and shifting funding to other activities or purchasing the service from another service provider.
2.	The municipality co-finances the maintenance of the centre.	The company makes no profit and does not perform the function of a social enterprise by its very nature.
3.	Families of the customers co-finance the cost of the service, thereby assuring their co-responsibility.	The municipality believes that due to lack of resources, the service should be set up by an NGO or a social enterprise, attracting Central Finance and Contracting Agency (CFCA) funding or other grants.
4.	-	According to R.Sturane, head of Jelgava Social Affairs Department, on 18 February 2020, Jelgava City Municipality faces the challenge of achieving performance indicators and providing the necessary services, including for children with functional disabilities. It is known that a part of the deinstitutionalization project social services will be launched around February 2023.
5.	-	The municipality must organize the procurement for the provision of the service. It is possible to reduce the price of the service or to change the service provider.
6.	-	Reconstruction of Lielplatone Primary School-Support Centre in Jelgava District with the aim of developing DCC for children and young people with functional disorders.

Source: authors' Study, 2020

**The main tasks for the implementation of the 1st development scenario** are the agreement with Jelgava municipality on the establishment of the centre and the services provided by the company, while mutually agreeing on the resources. At the same time, it is necessary to attract external funding for the centre (crowd funding, donations, endowments, ALTUM grants, projects, business angels etc.). The process of establishing the DCC should include promoting the business idea and informing the public, as well as reaching out to the target group and contracting with legal representatives. Finally, staff selection and training will be carried out.

**Development Scenario 2 "Youth Farm"** - social service is created - DCC for persons with severe MD ages 15 and over - "Youth Farm". The service is offered by a newly created social enterprise. Clients are cared for and employed, and the results of operations are used to maintain the centre.

Table 4

**Advantages and disadvantages of development Scenario 2 "Youth Farm"**

No	Advantages	Disadvantages
1.	Creating a customer-oriented social service (individually designed service program). A complex of services and continuity of services are provided.	It is necessary to attract external financing or investment for the DCC infrastructure.
2.	Promoting employment for social risk groups through competitive pay. Economic activity and alternative jobs are increasing.	Expenditure over revenue, high administrative costs. High financial risk. The dependence on external financing is not sufficiently reduced and additional external financing needs to be attracted.
3.	Possibility to use infrastructure to create new services.	Municipal resources may be required to provide a quality service that meets customer needs.
4.	Social entrepreneurs have preferential procurement contracts.	For a social entrepreneur, the outcome is not always important, but the process is important.
5.	Business methods address a social problem. It is not a priority to generate a dividend payout to the owners.	Low solvency of the target group (concerns family co-financing).
6.	-	There is a lack of real municipal and state support mechanisms for long-term social entrepreneurship.
7.	-	DCC services are semi-seasonal in nature.

Source: authors' Study, 2020

**The main tasks for the implementation of development scenario 2 "Youth Farm"** are to attract external financing for the centre (crowd funding, donations, endowments, ALTUM grants, projects, business angels etc.), followed by the purchase of the building and adjacent area; improvement, creation of centre and sensory room, arrangement, as well as creation of material and technical basis. After the establishment of the centre, similarly to development scenario 1, it is necessary to promote the business idea and inform the public, address the target group, as well as carry out personnel selection and training. Additional tasks for scenario development include planning of agricultural events with the involvement of agricultural experts, assessment of customer abilities, planning of service volume and marketing activities for marketing of goods.

**Development Scenario 3 "DCC in municipal delegation"**: a social service is created - DCC for persons with severe MD aged 15 and over. The municipality establishes the centre with its own infrastructure and concludes a delegation agreement with the newly created company, which operates accordingly to provide the services needed by the centre's clients. Clients are employed through cooperation with other entrepreneurs. After analysing the survey data, information provided by experts, data compiled by the author, and the advantages, disadvantages, and revenue and expenditure projections of each society development scenario, author concludes that Scenario 3 "DCC in municipal delegation" is best suited for a social enterprise to realize a business idea.

Table 5

**Advantages and disadvantages of development Scenario 3  
 "DCC in municipal delegation"**

No	Advantages	Disadvantages
1.	Social enterprise is a tool for a municipality to solve a social problem.	Municipal action must always have a legal basis.
2.	The municipality does not have to organize the procurement, in a sense creating security for the social enterprise.	To achieve the optimum result, you have to balance the equilibrium price with the real price.
3.	Under the Local Government and Social Assistance Act, the Municipality must provide DCC service to persons with MD.	Difficulties in attracting companies for which young people with MD could do some work.
4.	Ready infrastructure, no need to invest your own resources in building the infrastructure.	-
5.	Discretion in the exercise of an economic activity.	-
6.	A social enterprise can use municipal resources and available methods as one of its operating methods.	-
7.	Social enterprise is not restricted. The municipality has restrictions (money, tools, volume, territory), the social enterprise does not.	-
8.	The municipality can use "other" methods to solve the social problem. Use methods that are not typical for municipalities, a trans-regional approach, not to take risks on investment, failure, changes in market demand.	-
9.	Understanding of the legal environment. It is not always necessary to create an authority, institution or municipal authority for every problem.	-

Source: authors' Study, 2020

In order to develop Scenario 3 "DCC in municipal delegation", it is necessary to agree with Jelgava City Municipality on the provision of DCC services in the infrastructure created by the municipality by concluding a delegation agreement. This is followed by addressing the target group, contracting with legal representatives, evaluating customer capabilities, planning the scope of services and selecting and training the appropriate staff accordingly. The development of economic activity requires marketing activities to popularize services and attract partners.

Table 6

**Summary of scenarios for setting up a day care centre in Jelgava**

Scenarios	Identified problems	Solutions	Estimated annual expenditure, thsd. Euro	Estimated annual revenue, thsd. Euro
<b>Scenario 1 "Social enterprise DCC where municipality purchases service"</b>	Jelgava lacks CBS for young people with severe MD, resulting in difficulties for legal representatives of young people with severe MD to enter the open labour market	Establishment of a DCC centre for young people with severe MD, where care is provided.	151.8	183.6
<b>Scenario 2 "Youth Farm"</b>	Jelgava lacks CBS for young people with severe MD, resulting in difficulties for legal representatives of young people with severe MD to enter the open labour market	Establishment of a DCC centre for young people with severe MD, providing care, leisure, education, employment and employment of legal representatives of young people.	218.4	120.0
<b>Scenario 3 "DCC in municipal delegation"</b>	Jelgava lacks CBS for young people with severe MD, resulting in difficulties for legal representatives of young people with severe MD to enter the open labour market	Establishment of a DCC center for young people with severe MD, providing care, leisure, education, employment and employment of legal representatives of young people.	218.4	216.0

Source: authors' Study, 2020

After analysing all the developed scenarios, it is concluded that Scenario 3 "DCC in municipal delegation" is the most suitable for implementing the social enterprise business idea. This business model is focused on solving the social problem facing children in Jelgava and its immediate vicinity,

and the business idea has great potential for social impact and expansion, as well as the possibility to become financially self-sufficient in the future.

### **Conclusions, proposals, recommendations**

- 1) Social entrepreneurship is a way to solve effectively the problems of people at different risks of social exclusion, which can have a positive impact on the development of the city and society in the long run. By implementing the social entrepreneurship, it is possible to facilitate the work of the municipality and reduce the municipal budget expenses.
- 2) Association "Oranzais stars" has the necessary resources and platforms for successful social entrepreneurship and new community-based social services. However, the "Low solvency of the target group" is a significant threat to the development of the association. It may hinder development in the long run.
- 3) Children and young people with mental disabilities in the city of Jelgava have only basic education services, thus there is a problem and a significant need to provide young people with mental disabilities between the ages of 15 and 29 with a place to spend their free time, integrate into society and receive psychosocial assistance. Also, the research results reflect the topicality of this problem. Community-based services for young people with mental disabilities would contribute the integration of families into society and ensure their well-being, as well as reduce the risk of social exclusion.
- 4) In order for families with children with mental disabilities to function successfully, they need to receive appropriate services - educational and social. If such services are not available, there is a risk that these families will be exposed to poverty, unemployment (both young and old), social exclusion, parental burnout and exposure to physical and mental illness.
- 5) After evaluating the development scenarios of the Association "Oranzais stars", Scenario No. 3 "Day care centre in the delegation of the municipality" is the most effective that provides development of the new community-based services. The developed development scenario has a great potential for social impact and expansion and in the long run it is a financially self-sufficient.

### **Bibliography**

1. Dobele, L. (2013). *Socialas uzņemejdarbības attīstības iespējas Latvijā (Social business development opportunities in Latvia):* promocijas darbs (doctoral thesis). Latvijas Lauksaimniecības universitāte (Latvia University of Life Sciences and Technologies). Ekonomikas un sabiedrības attīstības fakultāte (Faculty of Economics and Social Development). Jelgava: LLU. 218 lpp.
2. Doherty, B., Foster, G., Mason, C., Meehan, J., Meehan, K., Rotheroe, N., Royce M. (2009). *Management for Social Enterprise*. London: SAGE publications, pp. 1-54.
3. *Enabling inclusive cities: tool hit for inclusive urban development* (2017) Mandaluyong City, Philippines. Asian development bank.
4. Komerclikums (Commercial law) (2002). LR Likums (Law of the Republic of Latvia). Retrieved: <https://likumi.lv/ta/id/5490-komerclikums>. Access 09.03.2020.
5. Latvijas Republikas Satversme (The Constitution of the Republic of Latvia) (1922): LR Likums (Law of the Republic of Latvia) Retrieved: <https://likumi.lv/ta/id/57980-latvijas-republikas-satversme>. Access: 06.01.2020.
6. *Likums „Biedrību un nodibinājumu likums”* (Law on Associations and Foundations) (2003): LR likums (Law of the Republic of Latvia). Retrieved: <https://likumi.lv/doc.php?id=81050>. Access 17.10.2019.
7. *Nabadzības risks un sociālā atstumtība Latvijā (Risk of poverty and social exclusion Latvia). Informatīvs apskats* (Informative review). Centrālā statistikas pārvalde (Central Statistical Bureau), Retrieved: [https://www.csb.gov.lv/sites/default/files/publication/2019-01/Nr\\_8-2\\_Nabadzibas\\_risks\\_un\\_sociala\\_atstumtiba\\_Latvija\\_2018\\_%2819\\_00%29%20LV.pdf](https://www.csb.gov.lv/sites/default/files/publication/2019-01/Nr_8-2_Nabadzibas_risks_un_sociala_atstumtiba_Latvija_2018_%2819_00%29%20LV.pdf). Access 14.01.2020
8. Noteikumi par sociālas atstumtības riskam pakļauto iedzīvotāju grupām un sociāla uzņēmuma statusa pieskirsanas, registresanas un uzraudzības kārtību (Regulations on the Procedure for Granting, Registering and Monitoring the Status of the Population at Risk of Social Exclusion and the Status of a Social Enterprise ) (2018), MK not. nr.173. (Regulations of the Cabinet of Ministers No 173) Retrieved:

<https://likumi.lv/ta/id/298035-noteikumi-par-socialas-atstumtibas-riskam-paklauto-iedzivotaju-grupam-un-sociala-uznemuma-statusa-pieskirsanas-registresanas>. Access 06.03.2020.

9. *Parskats par NVO sektoru Latvija (Overview of the NGO sector in Latvia)* (2011). Sabiedrības integrācijas fonds (Society Integration Fund), Retrieved: [http://www.biss.soc.lv/downloads/resources/SIF\\_Parskats\\_par\\_NVO\\_sektoru\\_Latvija.pdf](http://www.biss.soc.lv/downloads/resources/SIF_Parskats_par_NVO_sektoru_Latvija.pdf). Access 16.10.2019
10. *Socīālā uzņēmējdarbība (Social entrepreneurship)* [without the year] LR Labklājības Ministrija, Retrieved: [http://www.lm.gov.lv/lv/index.php?option=com\\_content&view=article&id=80690](http://www.lm.gov.lv/lv/index.php?option=com_content&view=article&id=80690). Access 06.01.2020
11. *Socīālā uzņēmuma likums (Social enterprise law)* (2018): LR Likums (Law of the Republic of Latvia). Retrieved: <https://likumi.lv/ta/id/294484-sociala-uznemuma-likums>. Access:06.01.2020.
12. *Sociālās politikas rādītāji (Social policy indicators)*. LR Labklājības ministrija (Ministry of Welfare of the Republic of Latvia). Retrieved: <http://www.lm.gov.lv/lv/publikacijas-petijumi-un-statistika/statistika>. Access 06.12.2019.

## LATVIAN INFORMATION TECHNOLOGY COMPANIES' EXPORT PROMOTION TO THE US

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**Abstract.** Information technology is one of the fastest growing service export industries in the world. According to information collected by LIAA (Information and Communications ..., 2018), in 2017, 40 % of Latvian information technology companies exported to the Baltic States. In 2017, the United States (further – US) was the ninth largest export partner and the 18 th largest import partner of Latvia. The US is the world's largest software and information technology services provider, accounting for ¾ of the total global IT market. Latvian information technology companies have an interest in an information technology service exports to the US; however, currently IT companies mostly choose not to conduct market research and export strategy development. Consequently, it is necessary to evaluate the export potential of Latvian information technology services and to determine the export promotion activities of Latvian information technology services to the US. So far, there are no analysis of the Latvian IT export promotion to US that would be based on company's needs, experience and resources available. The results of the research concluded that the export tendencies of IT services are upward and the export balance of Latvian IT services with the US is positive.

**Key words:** information technologies, export, information technologies' export promotion.

**JEL code:** E00, F60, L86

### Introduction

Latvia's trade balance with the United States is positive, and in 2017, Latvia's total trade in goods and services with the United States was EUR 672.4 million, which ranked the United States 13 th among Latvia's foreign trade partners (Latvijas ekonomiskā sadarbība ..., 2018).

Theoretical and practical research in information technology industry by looking closely at information technologies services' export promotion was conducted. The information technology companies' export promotion study applies to Latvian SME (small medium enterprises) to improve their export activity to the US. The export promotion aspect of information technology companies was studied in depth.

**The aim of the research** is Latvian information technology companies' export promotion analysis, in order to clarify the trends of Latvian information technology companies export to the US, to promote Latvian information technology companies' export to the US.

In order to achieve the objective, the following **tasks** have been set:

- to explore the theoretical aspects of export promotion and the implementation process in information technology companies, and to identify the key factors influencing these processes;
- to analyse and compare the information technology sector in Latvia and the US, to identify the main export promotion activities of Latvian information technology companies and to evaluate their results;
- to make structured surveys for Latvian information technology companies which are interested in export to the US;
- to identify approaches to promote the use of these factors to promote exports to the US, and to estimate the cost and effectiveness of implementing the export model developed.

**The methods applied.** Quantitative and qualitative research methods, including the structured expert interviews with representatives of the information technology industry, quantitative data

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analysis, SWOT analysis, the selection and analysis of available information about information technology services' export in the study were used.

**Novelty of the study.** There is not enough scientific research available analysing Latvian information technology companies' exports to the US, mainly research focuses on analysing Latvian companies' export to the European Union.

**Research sources and materials:** the research includes scientific articles and studies, books, reports (Latvian Annual Report, Companies Annual Report etc.), informative reports and statistics from databases such as Lursoft, Firmas.lv, Central Statistical Bureau, OECD Database, Statista, NASDAQ, United Nations statistical database, US Census Bureau, Eurostat etc.

**Research period:** August 2018 - December 2018.

## **Research results and discussion**

### ***Exports and information technologies***

Today's export trends are characterized by an international outflow of people and capital from Europe. For example, the outflow of capital from the UK to countries such as the US, Australia, Argentina, Brazil and Canada have provided Europe not only with new sources of food and raw materials, but also with new export markets. After the World War I, in order to protect domestic producers, Europe introduced restrictions on imports (tariffs, quotas, price restrictions etc.). In 1944, in order to mitigate the effects of the World War II on international science, the General Agreement on Tariffs and Trade (GATT) came into force (Seyoum, 2009, 3).

The results from the study showed that there is no consensus among theorists regarding export and export contributing factors. Katarzyna Twarowska and Magdalena Kakol in the article *International Business Strategy - Reasons and Forms of Expanding into Foreign Markets* identified the main reasons for export and the ways in which export activities are implemented. According to K. Tvarovska and M.Kakola, the desire of companies to acquire new markets identifies with the growth or expansion of the company in order to increase the profit of the company and the number of customers, as well as to reduce the production costs of products. There are two types of exports: direct and indirect. Direct export means that the company sells its products to foreign markets without intermediaries, but indirect exports to intermediaries or other agents involved in the transportation and product sales (Twarowska, Kakola, 2015, 1007).

Contrary to the views expressed by K. Tvarovsky and M.Kakola, M. Kogon does not distinguish between specific types of exports. He believes that export promotion activities in the company's target market should be carry out through agents or distributors, since agents or distributors are those who are familiar with the specifics of demand for the selected target market, legislation and other important export aspects (Kogon, 2015, 4).

Information technology is a term used to describe the acquisition, processing, maintenance and distribution of information. Information technology involves the application of computers and communication technologies to provide information processing and information flow from the development of an idea to the end user using the result obtained. It should be noted that information technology is limited to systems dependent on micro-electronic and telecommunication technologies (Sooryanarayana, Mudhol, 2000, 2).

The Meriam Webster dictionary, on the other hand, mentions that information technology is technology that involves the development, maintenance and use of computer systems, software and networks for the purpose of distributing and processing data (Definition of information ..., 2018).

The American Information Technology Association defines information technology as "computerized information systems most commonly used for research, development, development, support or management of software and computer systems." The primary purpose of information technology is to provide secure electronic equipment and software usage (Bloise, 2009).

### ***Information technologies current export trends in Latvia and US***

Information technology has evolved rapidly over the last thousand years and has become an important support for the communication and information flow. Developments in information technology in the last twenty years have transformed the way information is: obtained, processed, stored and disseminated. Researcher Manfred Kochen believes that the history of information technology development is a continuous process, which cannot be divided into specific periods (Sooryanarayana, Mudhol, 2000, 1).

Services provided by the Latvian IT industry are in demand not only in the Member States of the European Union but also in other continents. Thus, for example, exports of computer and information services to Member States increased by 20 % in 2015, but outside the EU by 41% (Export of ICT..., 2016).

Despite the fact that the IT sector accounts for about 4.7 % of GDP, it plays an important role in economic development. In addition to modernizing and improving the way businesses operate, information technologies can help boost economic competitiveness, creativity and innovation and tackle social challenges (as quality of life). Turnover of IT companies increases every year (IKT sektora uzņemumu ..., 2018).

When analysing the changes in the number of IT companies and the total number of companies in Latvia in the period 2012-2016, it is possible to determine that the total number of companies has increased by 25.60 % and the number of IT companies by 49.59 %. The share of IT companies in the total number of companies has increased by 0.91 % during this period. While in 2012 the number of IT companies was 4.8 % of the total number of companies in Latvia, in 2016 the number of IT companies reached 5.7 % of the total number of companies. These changes affected overall economic growth, which has led to increased demand for IT services and IT products (IKT sektors ekonomika, 2018).

Evaluation of the structure of the Latvian information technology sector in the period from 2012 to 2016 determines that the total number of IT companies has increased by 66 %, from 4390 companies in 2012 to 6567 companies in 2016. The largest share of IT companies, or 87 % on average, includes IT service providers, 12 % IT wholesale companies and about 1 % IT manufacturing companies (Latvijas statistikas gadagramata, 2017).

Table 1 shows the business performance indicators of the information technology sector as the number of employees, corporate profits, tax payments and turnover for the period 2012-2016 (Table 1) and these indicators were compared with the overall business performance in 2012. Table shows that all indicators have increased during this period (IKT sektors ekonomika, 2018).

Table 1

**Latvian IT companies' performance changes in 2012-2016, millions, EUR**

<b>Business performance indicator</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>Changes to 2012,%</b>
<b>Number of employees in IT companies</b>	21449	23305	26522	29203	31801	48.26
<b>Total number of employees</b>	573580	584281	619684	633450	634958	10.70
<b>% of the total number</b>	3.74	3.99	4.28	4.61	5.0	1.27
<b>IT turnover (million, EUR)</b>	2897	3099	3063	3497	3471	19.81
<b>Total turnover (million, EUR)</b>	49907	52174	51103	51304	51196	2.58
<b>% of the total number</b>	5.80	5.94	5.99	6.82	6.78	0.97
<b>IT gross profit (million, EUR)</b>	205	206	221	247	290	41.46
<b>IT company taxes (million, EUR)</b>	21	35	38	42	47	123.81

*Source: authors' calculations based on "IKT sektors ekonomika", 2018*

Due to the increase in the number of IT companies, the amount of taxes paid by companies has increased by 123.81 % (in 2012 - 21 million EUR, but in 2016 - 47 million EUR). During this period, the turnover of IT companies increased by 19.81%, while the gross profit increased by 41.46 %. This situation reflects the increasing influence of IT companies on the country's economic growth (IKT sektors ekonomika, 2018).

During the research, information was gathered about the Latvian Information Technology companies *Mapon, Vendon, Meditec, Tilde, Elva Baltic, Datakom, Computer Hardware Design, ABC Software, Digital Economy Development Center*, as well as *SAF Tehnika* core business, as well as current and desired export market. (ICT Industry Companies ..., 2018).

Lithuania, Germany and the United States are the most frequently mentioned as the existing export markets for Latvian IT companies but Germany, the United Kingdom and the US are preferred. This shows that Latvian IT companies consider not only Scandinavian, Baltic or nearest EU countries as one of the main export markets for IT services, but also the US (ICT Industry Companies..., 2018).

The United States is a major player in the world of software and information technology services. It is worth mentioning that more than three quarters of the global IT market, estimated at USD 3.8 trillion, provides the United States. The IT sector employs more than 10.5 million people in the US and has a GDP of USD 1.14 trillion. The number of IT employees has increased by 14.6 % since 2014 (The Software and ..., 2018).

In the US, there are over 100,000 software development and other IT service companies, more than 99% of which are small or medium-sized enterprises with up to 500 employees. These include software developers, programming service providers, computer system developers, also equipment development, repair and maintenance companies. The number of highly qualified IT staff has increased significantly in recent decades, reaching around two million (The Software and ..., 2018).

Software development and maintenance companies in the US operate in a harmonized marketplace and are recognized as providing reliable, efficient, and relatively fast solutions. Multinationals and foreign companies are showing interest in the US market despite it is regulated, particularly with regard to intellectual property and copyright. The US IT companies are the market leader in software and are competitive in almost all other market segments with a solid foreign market share (The Software and ..., 2018).

According to data compiled by Bloomberg, IT companies in the United States are divided into the following industries: technology equipment, storage and peripherals, technology equipment and equipment, software services, software, semiconductors and semiconductor equipment, IT services,

Internet software services, electronics equipment, communications equipment (Information Technology: Stock..., 2018).

The IT industry in the US is regulated, with at least 34 federal laws, regulations, and standards governing the private IT sector and related industries. Of these: one is the law, 25 - the rule, but 8 are mandatory industry standards. These standards cover 10 of the 18 critical infrastructure sectors and include sectors such as agriculture and food production, energy, environment and manufacturing, transport systems. Each of the 34 federal laws is subject to at least one enforcement mechanism. These mechanisms include court orders, fines, criminal penalties and other administrative actions such as license revocation and suspension. Most commonly, these contract enforcement mechanisms are those used by information technology companies and their clients to enforce defaults, but they do not always directly relate to the IT industry, IT systems and data provision (Langevin, Jackson-Lee, 2008).

The US IT companies' foreign trade balance for the period 2006-2012 is characterized by an annual average increase in the value of IT exports of USD 57.91 million, or 9.14 % annually (Table 2). This indicates that one of the most important export sectors in the US is information technology (Exports and American ..., 2014).

Table 2

**The US IT companies' foreign trade changes 2006-2012, million USD**

Year	2006	2007	2008	2009	2010	2011
<b>ICT export value, million USD</b>	40.8	50.6	55.4	55.6	62.0	69.2
<b>Changes from previous year, %</b>	X	24.02	9.48	3.61	11.51	11.61
<b>ICT import value, million USD</b>	140.3	135.3	137.1	112.6	133.9	139.9
<b>Changes from previous year, %</b>	X	-0.4	1.3	18.0	18.9	4.2
<b>Balance sheet, million USD</b>	-99.5	-84.7	-81.7	-57.0	-71.9	-70.7

*Source: authors' calculations based on ICT goods exports, 2018; Exports and American ICT Companies and Workers, 2014*

The US IT companies' foreign trade balance and a comparison of its results with the previous period show that the volume of US IT companies' imports is volatile during this period, however, on average it is increasing by 5.84 % annually and reaches 113.88 million US dollars (ICT goods exports, 2018).

The export balance is negative during this period, however, the volume of imports is decreasing by 55.97 mln US dollars, and the value of imports has decreased by 32.7 million US dollars. This indicates that the US is one of the countries with which it is possible to develop international cooperation for the provision of IT services (Exports and American ..., 2014).

The largest US IT export markets in 2012 were the EU (56 million), Mexico (39.6 million), Canada (31.8 million), China (15.3 million), Japan (14.9 million) and Brazil (13.1 million). Mexico was the largest export market for computers and equipment as well as semiconductors in 2012, while the EU was the largest export market for software, navigation equipment, communication equipment, computers and data processing services, and databases and IT services. The main export markets for audio-visual equipment, on the other hand, were Canada and the telecommunications market was Brazil. Changes in ICT exports are shown in the table below (Table 3) (Exports and American ..., 2014).

Table 3

**Changes in US IT companies' foreign trade 2006-2012, million USD**

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<b>Changes from previous year,%</b>	X	-0.4	1.3	18.0	18.9	4.2
<b>Balance sheet, million USD</b>	-99.5	-84.7	-81.7	-57.0	-71.9	-70.7

*Source: authors' calculations based on ICT goods exports, 2018; Exports and American ICT Companies and Workers, 2014*

Analysing the US IT industry export changes in four IT industries during 2006 and 2012, the fastest growth of 97.2 % and 96.9 % was in telecommunications services, computers and data, respectively export of processing services. Exports of databases and other IT services increased most during this period, by 39.2 %. This indicates that the need for these IT services is decreasing (Exports and American..., 2014).

**Analysis of Latvian information technologies companies' export to the US**

The study carried out an evaluation of Latvian information technology exports by conducting expert interview analysis, which reflects experts' views and observations on the IT industry and IT services' export potential to the US.

Authors carried out Latvian information technologies companies' representatives survey via e-mail in 2018. In order to find out as broad view as possible, the survey was sent out to Latvian information technology companies (SMEs) that were interested to promote export activities in the US.

The results of the interviews conducted and the additional information analysed indicate that the export trends of Latvian IT services to the US are upward. Experts estimate that Latvia's IT services are qualitative and competitive in the US; however, in order to promote export development, it is necessary not only to improve the IT legal framework in Latvia, but also to develop support measures for Latvian IT companies that want to attract partners or investors from the United States.

Taking into account the specifics of the Latvian information technology industry, it was concluded that in order to promote the export of Latvian IT services to the US, it is necessary to develop criteria on which to determine, which are the necessary export promotion activities and include a summary of market research methods and export strategies. As the study concluded, Latvia's trade balance with the US is currently positive and the interest of Latvian IT companies in acquiring new export markets was observed; therefore, it is necessary to promote the export of Latvian IT services to the US.

The results of the expert interviews reflect, that the developed export promotion model enables companies to reduce the time of development of IT service export promotion activities for SMEs to 63% of the average time planned or about 22h, and to increase the budget for export promotion activities on average by 80% of the total export budget. This permits to save an average of 19% - 37% of the expenses necessary for the development of export promotion activities. Based on the research results, including the results of the research and its reliability, the author proposes proposals for Latvian IT companies that are interested in exporting to the US. In order to harness the potential of the United States as a potential export market, cooperation needs to be established with companies in the United States using different IT platforms, as well as participating in presentations and trade missions.

In order to minimize the potential negative impact on the export of Latvian IT services to the United States, information technology companies need to conduct in-depth market research before conducting export activities and determine the competitiveness of IT services exported. In order to improve the competitiveness of Latvia's IT services' exports and consummate the IT sector in Latvia, the legislator needs to improve the legal framework of the Latvian IT industry by developing information technology law and quality service standards.

### **Conclusions, proposals, recommendations**

- 1) Although management theory contains different definitions for export, they are based on the assumption that exports are movements of goods or services between buyers and sellers in different countries, and can be tailored to the specifics of the business.
- 2) The efficiency of Latvian IT companies' export strategy development and implementation is influenced by ill-considered and unprofessional behavior during its development and implementation, moreover, Latvian IT companies, for reasons of resource efficiency, mostly choose not to carry out export market research and export market acquisition strategy development.
- 3) The beginnings of the information technology industry date back to the time when written communication began to develop. Not only is the number of IT companies and their profits growing globally, with an average of 10% each year, but also their impact on global business trends. The countries of origin of the most successful IT companies include the United States, France and Germany.
- 4) The main export markets of Latvian IT companies are Lithuania, Estonia and Scandinavian countries. The trade balance of IT services is negative, but from 2012 to 2016, the export of IT services increased by 74.9% and the imports by 76.0%.
- 5) The US information technology industry is highly regulated, IT companies are mostly public limited companies, and 99% of US software development companies are SMEs. The industry's average GDP is USD 1.14 trillion.
- 6) Between 2013 and 2017, the value of US IT exports increased by an average of 9.14% annually, however, the US export balance was negative; whereas since 2006, the value of IT imports has increased by an average of 5.84%. The main US IT export markets are the EU, Mexico, Canada and China.
- 7) Evaluating the opinion of experts of the Latvian information technology sector, it was found that the export tendencies of IT services are upward and the export balance of Latvian IT services with the US is positive. However, in order to promote Latvian IT companies export potential, it is necessary to consummate IT field law.
- 8) According to experts, the export of Latvian IT companies' services to the US is influenced not only by the quality and competitiveness of IT services, but also by the ability of companies to attract investors and cooperation partners.
- 9) According to experts, it was found, that in order to expand Latvian IT companies export to US, it is necessary to use different IT platforms, attend field presentations and participate in trade missions.

## Bibliography

1. Bloise, Y. (2009). *Information and Communications Technology IT/ICT*. Retrieved: [http://www.ceird.gov.do/invest/downloads/Information%20Communication%20and%20Technology%20\\_1\\_.pdf](http://www.ceird.gov.do/invest/downloads/Information%20Communication%20and%20Technology%20_1_.pdf). Access: 07.09.2018
2. *Definition of information technology* (2018). Retrieved: <https://www.merriam-webster.com/dictionary/information%20technology>. Access 07.09.2018
3. *Exports and American Information and Communications Technology Companies and Workers* (2014). Retrieved: [http://www.techceocouncil.org/clientuploads/reports/Exports%20for%20American%20ICT%20Companies%20and%20Workers-FINAL2\\_150DPI.pdf](http://www.techceocouncil.org/clientuploads/reports/Exports%20for%20American%20ICT%20Companies%20and%20Workers-FINAL2_150DPI.pdf). Access: 25.09.2018
4. *Export of ICT sector services has grown by 24% last year* (2016). Retrieved: [https://www.likta.lv/EN/Activities/Lists/Activities/Attachments/16/LIKTA/EksportaDati\\_ENGpdf](https://www.likta.lv/EN/Activities/Lists/Activities/Attachments/16/LIKTA/EksportaDati_ENGpdf). Access: 17.09.2018
5. *ICT goods exports* (2018). Retrieved: <https://data.oecd.org/ict/ict-goods-exports.htm>. Access: 26.09.2018
6. *ICT Industry Companies database – Exim* (2018). Retrieved: <http://ict-industry-companies.liaa.gov.lv/>. Access: 20.09.2018
7. *IKT sektors ekonomika* (2018). Retrieved: [https://data1.csb.gov.lv/pxweb/lv/uzn/uzn\\_\\_uzndarb/SBG010.px/table/tableViewLayout1/?rxid=e74cdd4a-4f75-4a59-8229-b138ccad88b2](https://data1.csb.gov.lv/pxweb/lv/uzn/uzn__uzndarb/SBG010.px/table/tableViewLayout1/?rxid=e74cdd4a-4f75-4a59-8229-b138ccad88b2). Access: 20.09.2018
8. *IKT sektora uzņemumu apgrozījums* (2018). Retrieved: [https://data1.csb.gov.lv/pxweb/lv/zin/zin\\_\\_ikt\\_sektors/ITG230.px/?rxid=fb077d44-bad5-463c-b19b-046fa8530f48](https://data1.csb.gov.lv/pxweb/lv/zin/zin__ikt_sektors/ITG230.px/?rxid=fb077d44-bad5-463c-b19b-046fa8530f48). Access: 17.09.2018
9. *Information and Communications Technology Industry* (2018). Retrieved: <http://www.liaa.gov.lv/en/trade/industry-profiles/information-and-telecommunications-technology-industry>. Access: 17.09.2018
10. *Information Technology: Stock Sector Performance* (2018). Retrieved: <https://www.bloomberg.com/research/sectorandindustry/sectors/sectordetail.asp?code=45&country=CA>. Access: 17.09.2018
11. Kogon, M. (2015). *Exporting Basics. The Why's, How-To's and To-Do's for New Exporters*. 5th edition. USA: International Trade Compliance Institute. 109 p.
12. Langevin, J., Jackson-Lee, S. (2008). *Information Technology: Federal Laws, Regulations, and Mandatory Standards to Securing Private Sector Information Technology Systems and Data in Critical Infrastructure Sectors*. Retrieved: <https://www.gao.gov/products/GAO-08-1075R>. Access: 25.09.2018
13. *Latvijas ekonomiskā sadarbība ar ASV* (2018). Retrieved: [http://eksports.liaa.gov.lv/files/liaa\\_export/attachments/2018.03\\_lv\\_asv\\_ekon\\_sad.pdf](http://eksports.liaa.gov.lv/files/liaa_export/attachments/2018.03_lv_asv_ekon_sad.pdf). Access: 24.09.2018
14. *Latvijas statistikas gadagramata* (2017). Retrieved: <https://www.csb.gov.lv/lv/statistika/statistikas-temas/ekonomika/ikp/meklet-tema/163-latvijas-statistikas-gadagramata-2017>. Access: 23.09.2018
15. Seyoum, B. (2009). *Export-Import Theory, Practices, and Procedures. 2nd edition*. New York: Routledge Taylor & Francis Group. 677 p.
16. Sooryanarayana, P. S., Mudhol, M. V. (2000). *Communication Technology: Its Impact on Library and Information Science*. Delhi: Ess. 22 p.
17. Twarowska, K., Kakol, M. (2015). *International Business Strategy - Reasons and Forms Of Expansion Into Foreign Markets*. Proceedings of the International Conference 2013 of Knowledge Management & Innovation, June 19 - 23, 2015. Zadar: ToKnowPress International Academic Publisher, pp. 1005-1015.
18. *The Software and Information Technology Services Industry in the United States*. Retrieved: <https://www.selectusa.gov/software-and-information-technology-services-industry-united-states>. Access: 24.09.2018

## THE USE OF PUBLIC FINANCIAL SUPPORT: STUDY OF MICRO-ENTERPRISES

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**Abstract.** At times when businesses are expected to contribute to economic growth, the topic of access to finance remains relevant. The study investigates the availability of public financial support for micro-enterprises which similarly to the European average is the largest enterprise category in Latvia (about 94%). In an ad hoc survey of the companies registered in Latvia in nationally defined sectors, entrepreneurs disclosed their sources of funding over the three-year period of 2015-2017. Valid responses from 2511 companies, of which 1879 were micro-enterprises, revealed not only the diversity of their financial sources but also funding conditions impracticable to companies. According to the data processed by SPSS, micro-enterprises still prefer bank financing (11%) among many sources, whereas only 4% of the respondents used loans supported by public funding. Surprisingly, while almost half of the micro-enterprises required new or additional funding, a large number relied solely on internal finance. Rejections were frequent not only from banks, but also from the institution providing for public financial support.

**Key words:** banks, finance institutions, micro-enterprises, public financing

**JEL code:** G21, G23, G28, L29

### Introduction

The European Commission set up the framework for public financial support to improve access to finance for SMEs, in acknowledgment of the dependence of economic success in Europe on the growth of small and medium-sized enterprises (SMEs). Micro-enterprises (MEs) (i.e., enterprises with fewer than 10 employees and a turnover or a balance sheet total below 2 M euros, as defined by the European classification system) are the most common type of non-financial companies in the European Union (EU). They represent 93 % of all European businesses and employ 30 % of EU workers. (Kraemer-Eis H. *et al.*, 2019). MEs also form the largest share of companies in Latvia, where they account for 94 % of all the economically active enterprises (Central Statistical Bureau..., 2019). Their role in Latvian economy is comparatively higher than on average across the EU, with a business turnover of 26 % against the EU average of 17 % (Ministry of Economics..., 2019b). Previous studies have shown improved access to finance as the most effective way of removing the barriers for company growth (e.g. Beck T. and Demirgüç-Kunt A., 2006). Therefore, our focus in the present study is availability of finance to MEs.

A survey by the European Central Bank reports that access to finance largely remains a problem for the European MEs as compared to companies of other size classes, with 9 % of MEs reporting it as their biggest problem in 2019 (compared to 6 % in the small company, 7 % in the medium-sized and 5 % in the large company segments respectively). This is an improvement since 2014 when 15 % of the MEs reported it as their most essential problem. Meanwhile, only 5 % of the MEs reported improved access to external funding, especially bank loans, compared to the past 6 months (European Central Bank, 2019).

An ad hoc online survey (WAPI) was conducted among the businesses registered in Latvia to establish the financial sources predominantly used by the entrepreneurs, the grounds on which their requests were turned down. The survey sought to establish how prevalent was the problem of accessing external funding among companies, depending on their size and regional location. A second aspect in the context of the assessment was availability of public funding to MEs in the situation of

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seemingly ample availability of EU funds to Latvian businesses. By looking at the perceptions of businesses of public financial support implemented via the financial offers from the joint stock company "Development Finance Institution Altum" (ALTUM), we have attempted to highlight the differences between the ambitions of MEs to access finance, including public financial support, and the practical obstacles encountered.

A computer assisted web interviewing (CAWI) questionnaire was sent out to all companies with publicly available e-mail addresses in the period between October 1, 2017 and January 25, 2018. The request to fill out the questionnaire was addressed to the person responsible for the company's finances. The target population included all companies across the territory of Latvia with activities in sectors eligible for public support. The entire segment studied included all the active businesses registered in the Latvian Enterprise Register with the 11 defined NACE codes, i.e. 32 308 companies in total. For improved representativeness data were weighed by the share of the sector. Responses from 2511 companies were considered valid, from them 1879 responses came from MEs. Businesses were invited to reveal their financial sources over the period of three years: from 2015 to 2017. The results regarding the sources of financing that the Latvian MEs chose or declined to use and the grounds for making the choice were comparable to the average European context, as perceived by the MEs of EU. This suggests that despite the policy measures established for improving access to public finance, including for the MEs, there have been few targeted actions for making these measures work, and the proposals drafted may be delayed.

### **Micro enterprises financing – theoretical aspects**

The issue of access to finance for MEs with respect to available public support has not been a topic widely studied. Therefore, the literature review includes sources with conclusions on accessibility of finance also for other businesses, when they are relevant for MEs. A range of authors have studied small companies without specifically singling out the ME category. More attention has been given to the description of the smallest businesses, as well as start-up companies. Since newly established companies are predominantly small and do not exceed the size of MEs, conclusions on start-ups have also been included. For example, Brown R. and Lee N. (2017) acknowledge that small firms are different from big firms, and these features have significant ramifications for their ability to obtain finance and the problems related to poor access to financing seem particularly acute for the smallest firms and new start-ups.

Several authors (e.g. Hall G. *et al.*, 2000; Beck T. and Demirgüç-Kunt A., 2006; Beck T. *et al.*, 2008; Moritz A. *et al.*, 2016) have stressed in their studies the importance of company size in accessing finance, stating that small businesses are more restricted in this area than larger companies. They also emphasize the importance of financial institutions that may provide for appropriate funding and enable access.

The World Bank research (Schiffer M., Weder B., 2001) may have been the first instance when size of the company and differences in company size have been highlighted as a barrier to their development. Even though MEs were not singled out within the small company group, the research drew an conclusion that smaller firms faced significantly more problems with financing than larger firms. Thus, one of the main goals in developing support policies for the MEs with a view of setting a level playing ground for competition between companies is to find a way how to mitigate the consequences of this difference.

However, only EIF researchers (Masiak C. *et al.*, 2017a) in a survey of EU Member State companies (notably, in the context of the SME definition developed in EU) reported, that MEs differed from small and medium-sized companies in their sourcing patterns. Results reveal that micro firms are more likely to use internal financial sources. Also, micro firms appear less likely to be funded by subsidised loans or grants, even though they are often targeted by specific support programmes.

Despite the substantial measures undertaken by authorities to increase financial support, it is found that small businesses, particularly start-ups, face many obstacles (Ruchkina G. *et al.*, 2017; Klein M. *et al.*, 2020). The most recent data show that MEs are less active in using external financial instruments than their larger peers, the reason possibly posed by difficulties in accessing them. The survey (European Central Bank, 2019) has determined that bank loans are used by 18.9 % of the small companies and by 25.3 % of the medium companies, while the share of MEs that use bank loans is as low as 11.6 %. Notably, almost half of the MEs indicated that bank loans were a relevant source of funding, the percentage by far exceeding the rate at which they themselves used the source.

The survey SAFE (Kwaak T. *et al.*, 2019) states that the bank loan rejection rate is still highest among MEs (10.8 %), compared to 5.8 % among small firms and 3.1 % among medium-sized firms. Consequently, the share of MEs that failed to apply for a loan due to fear of being rejected (discouraged borrowers) remains high at 5.7 %. Among the MEs, 54 % said they did not use bank loans because they were not a relevant source of funding for them. The SAFE survey concluded that frequent reasons for avoiding bank loans among MEs were: insufficient collateral, high interest rates and excessive paperwork. Rejected or discouraged customers often turned to an alternative solution.

When developing public support in the form of financial instruments (FIs) designed by EU funds to overcome "market failures" it is important to be aware that "not all SMEs are the same" (Cassar G., 2004). The author draws attention to the financial problems particularly acute for the smallest firms. The results of the study (Masiak C. *et al.*, 2017b) show that the funding sources of SMEs depend on the type of business, industry and other characteristics of the company. The public support-based FIs seem to be used less often by micro firms than by larger-size companies. The MEs covered within their study also depended on internal funding to a higher extent. The motivation was that there was little clarity about the specific nature of the public support developed: such support either did not meet the requirements of the MEs or, else, the MEs were not aware of the government support provided via the FIs, despite of the fact that the programmes were specially designed to facilitate access to finance.

## **Research results and discussion**

### **1. Results**

A company survey was carried out in early 2018 to establish the options of MEs in Latvia for obtaining funding and the potential sources. The aim of the survey was to find out the funding needs in strategically important sectors, the importance of "access to finance", the preferences of companies when choosing the sources and the extent to which MEs sought for public support and obtained it. The survey data processing, reliability tests (Table 1), Kolmogorov-Smirnov Test (Table 2) have been done by the programme in the SPSS environment.

Table 1

**Data reliability tests by SPSS**

Case Processing Summary				Reliability Statistics	
		N	%	Cronbach's Alpha	N of Items
Cases	Valid	1879	100,0	,823	13
	Excluded <sup>a</sup>	0	,0		
	Total	1879	100,0		

a. Listwise deletion based on all variables in the procedure.

Table 2

**One-Sample Kolmogorov-Smirnov Test**

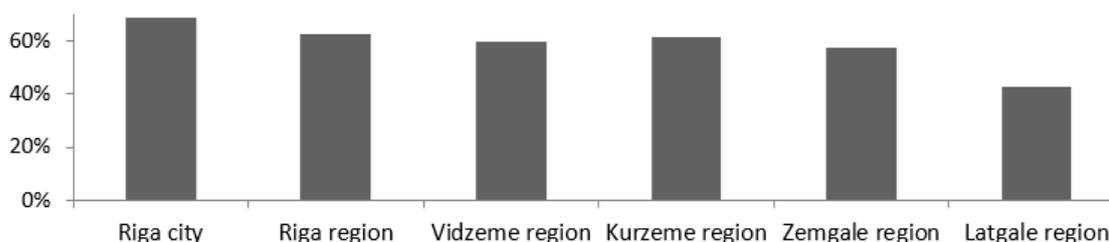
		ID	Access to finance
N		1879	1879
Normal Parameters <sup>a,b</sup>	Mean	1567,49	2,94
	Std. Deviation	927,600	1,406
Most Extreme Differences	Absolute	,065	,139
	Positive	,065	,139
	Negative	-,051	-,132
Kolmogorov-Smirnov Z		2,812	6,011
Asymp. Sig. (2-tailed)		,000	,000

a. Test distribution is Normal.

b. Calculated from data.

The survey data have been analysed from a regional perspective according to the legal address of the companies: separate for Riga and the 5 statistic regions of Latvia.

In response to the question "What types of financing does the company use now or in 2015-2017?", 64 % of a total of 1869 MEs indicated that they relied solely on internal financing (loans from the owner, relatives, friends or related companies, proprietary investment in fixed assets, or undivided profits). The highest share of MEs that relied solely on internal funding was in Riga (69 %), whereas the lowest share was in Latgale (43 %) (Figure 1).



Source: authors' calculations

Fig. 1. MEs relying solely on internal funding 2015-2017, breakdown by region (n=1201)

The survey allowed MEs to indicate more than one source of financing. Among the prevailing sources of external financing mentioned by the rest of the MEs were: ALTUM loans – 4 %, EU funds – 6 %, bank loans guaranteed by ALTUM – 3 %, long-term or short-term bank loans, credit line, overdraft – 11 %, lease financing – 13 % and supplier or contractor debt – 10 %. Other sources appeared rarely, e.g. only 10 MEs (all of them located in Riga) mentioned venture capital funds and business angel funds.

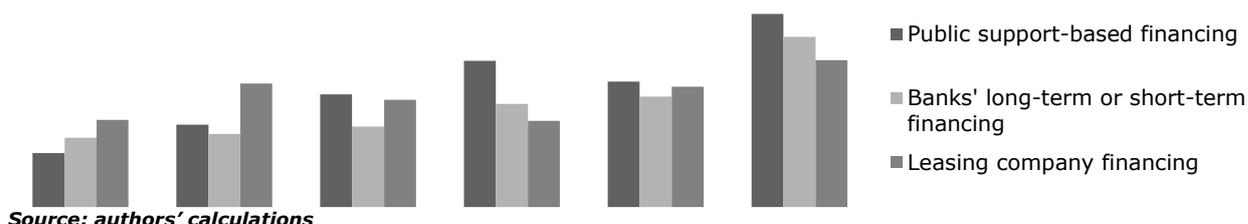
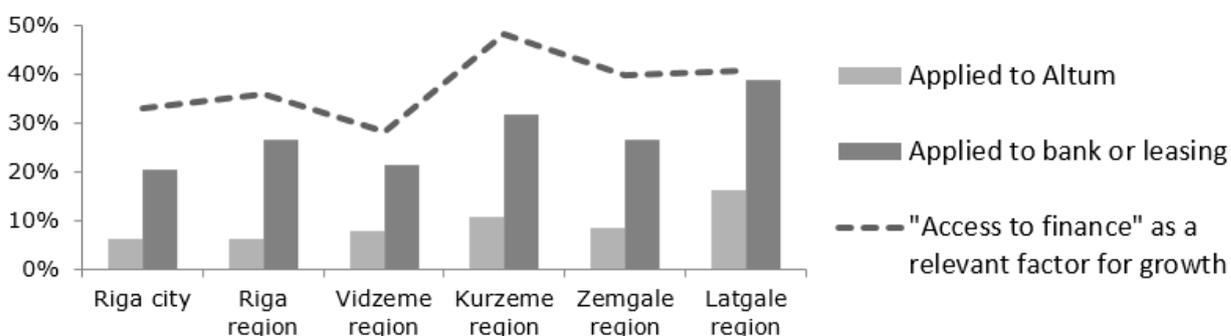


Fig. 2. The prevalent funding sources in 2015 – 2017, breakdown by region (n=678)

Leasing companies were more commonly mentioned by companies in Riga and the Riga region. Alternatively, public support-based financing (bank loans guaranteed by ALTUM, ALTUM loans, incl. mezzanine and EU fund- based financing) appeared to be in comparatively high demand in all regions (excluding Riga) (Figure 2). Public financial support has been more widely used in the Latgale and Kurzeme regions, whereas the total amount of external funding consumed has been highest in Latgale.

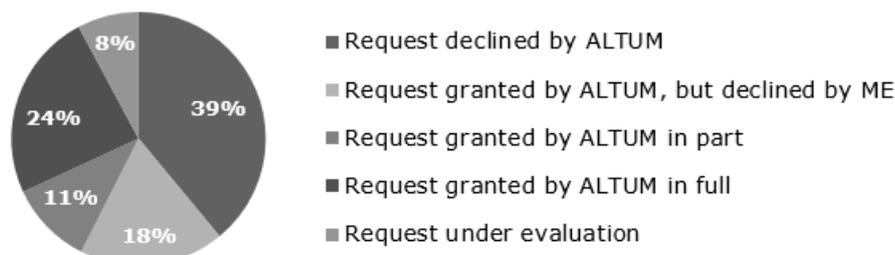


Source: authors' calculations

Fig. 3. The share of MEs that indicated "access to finance" as a relevant factor, and the share of MEs that addressed their financing needs to ALTUM, the banks or leasing companies in 2015 – 2017, breakdown by region (n=1879)

Out of the surveyed MEs, 49 % indicated new or additional finance needs in 2015-2017, whereas in Kurzeme and Latgale the percentage was even higher – at 60 %. About 35 % pointed out that "access to finance" was relevant for company growth. This was particularly emphasized by the MEs of Kurzeme and Latgale. On the other hand, only a small part of MEs applied for funding to ALTUM irrespectively of the region of their location (Figure 3).

From the companies that addressed their funding needs to ALTUM, 55 MEs (or 39 %) were rejected (Figure 4). Only every 4<sup>th</sup> applicant obtained the full amount of funding requested. 26 MEs (or 18 %) did not accept ALTUMS's offer, pointing to complicated application review procedures, the high number of documents required, high collateral requirements and the overall price of the loan.

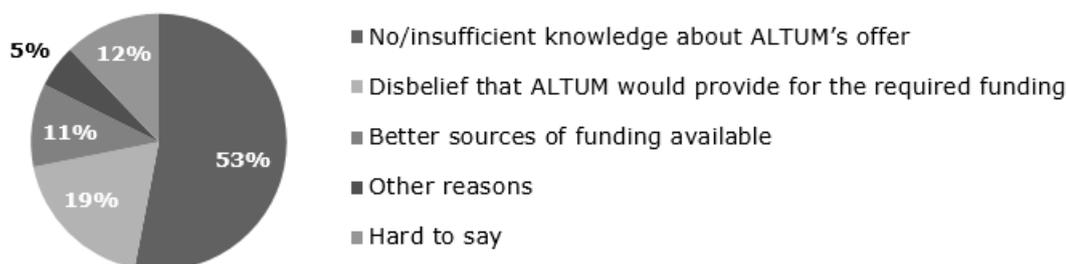


Source: authors' calculations

Fig. 4. Outcomes for the MEs that addressed their funding needs to ALTUM 2015 - 2017 (n=141)

The question of why the ME did not consider applying to ALTUM for funding was answered by 31 % of the respondents. Notably 53 % indicated that they lacked knowledge about the funding

possibilities offered by ALTUM, whereas 19 % thought that ALTUM would not support their financial needs (Figure 5).



Source: authors' calculations

Fig. 5. Grounds for the MEs to address their funding needs to ALTUM 2015-2017 (n=590)

## 2. Discussion

European Commission works on improving access to finance for SMEs. A range of FIs providing for state aid have been developed to offer alternative financial products instead of traditional debt financing. FIs are measures of financial support provided on a complementary basis from the budget in order to address specific policy objectives of the EU in the form of equity or quasi-equity investments, loans or guarantees and other risk-sharing instruments (Regulation (EU, Euratom)..., 2018). Notably, not all of them are suitable to all companies. As such, they should be adapted to businesses regarding company size, risk level, business cycle and other criteria. There is a lot of imbalance in the development and use of alternative FIs across Member States (OECD, 2018).

From the 4.4 B EUR planned for entrepreneurial support in the multi-annual financial framework of 2014-2020 in the priority "Competitiveness of small and medium enterprises", the amount allocated to Latvia was 334.3 M euros (Ministry of Economics..., 2019a). After deducting the share of the intermediaries, the amount available to the final beneficiaries (commercial companies) through FIs in the financial institution ALTUM and the accelerator and venture capital funds has been 162.46 M euros. Essentially, EU grants funding in the form of state aid for every Member State on the condition that it will be solely used to target market failure. The progress report on implementation of FI programs has established that despite the measures to ensure SME access to finance in the Latvian financial market, market failure persists (Ministry of Economics..., 2017). The report recommended maintaining ALTUM's interventions in funding the small businesses, given the differences in the lending policies and financing conditions of ALTUM and the commercial banking sector. In turn, the Board Chairman of the Association of Regional Development Centres (ARDC) has voiced an opinion that state support, for example, the FIs offered by ALTUM, tends to be too selective, and the conditions for support programmes do not consider the dimension of regional development (Krauklis V. A., 2019).

In their final evaluation of the contribution of the EU funds for business support in the 2007 – 2013 programming period in Latvia, the authors (Ernst&Young Baltic, 2018) concluded that the impact on business development has been insufficient to address regional development problems. Among the ME programmes focussing on their support, the one highlighted was "Aid for Investment in Micro, Small and Medium-Sized Companies in Assisted Areas", which is no more on offer.

Some studies on Latvian MEs show that barriers in access to finance persist. A survey (Vanags J. et al., 2018) conducted among 103 Latvian entrepreneurs in the cross border area of Latvia and Lithuania and covering 68.6 % of the Latvian MEs showed that the majority of both new and existing companies perceived that there was a need for public support in the form of loans, grants and other

support instruments. They saw the need for specific programmes to assist companies operating in the regions.

Latvia is one of the few countries that has developed a separate law for public support of innovative start-ups that might be rapidly developed to a global scale. In 2019 there were more than 400 start-ups that complied with the criteria in the legislation; however, in early 2020 only 6 of them obtained support from the state financing programme (Investment and Development Agency..., 2020). Yet, the study (GatewayBaltic, 2019) found that several start-ups were needed a loan for development but had been prevented from turning to ALTUM on account of the private guarantee requirement for securing the loan. Such requirements are, in fact, inappropriate in the initial stage of a business when the success of the business is still under question. Meanwhile, several start-ups stated that they had gained some external funding: in 30 % of the cases the source has been "business angels", in 18 % – acceleration funds, in 18 % – venture capital funds, in 12 % – loans for starting a business, whereas 7 % indicated that they had made use of a grant for start-up activities and 2 % had benefited from crowdsourcing activities. This study on start-ups concluded that the initial goal for supporting them has become outdated.

Notably, ALTUM offers programmes on favourable conditions providing a solution for many MEs as an alternative to loans. A research conducted by ALTUM found that within the next few years business development in Latvia, micro businesses included, might require about 7 B euros (Firmas.lv, LETA, 2018). ALTUM covers about 40 % of the amount that might potentially be required for business support. Also, most of the businesses do not even apply for the support. If all the companies rejected by banks turned to ALTUM with their financial needs, the number of loans could be doubled.

The most recent survey (ALTUM, 2020) among more than 300 new entrepreneurs in Latvia who have started a new business or business project over the past 3 years established that the majority or 85 % of the entrepreneurs initially sourced it from internal funding, which is more than the share of 76 % recorded in 2017. The surveyed entrepreneurs also indicated (as compared to 2017) that they had sourced their business from: partner capital – 21 % (14 %), family savings – 16 % (20 %), family loan – 8 % (5 %), private loan – 12 % (8 %), national, EU or organizational level support programmes – 10 % (13 %), bank loans – 8 % (9 %). Even though the surveyed entrepreneurs perceived ALTUM as the most popular institutional financing source, they also indicated their perception that there would be less available funds in the coming year.

### **Conclusions and recommendations**

In circumstances when Latvia has enough funds for EU granted state aid, availability of public support-based funding remains a challenge for many MEs in Latvia. A survey of Latvian companies active in the strategically important sectors has led to the following conclusions:

- 1) Even though about half of the MEs need finance, they are more likely to rely solely on internal rather than external funding.
- 2) Public support-based funding is not a popular choice among MEs for sourcing company growth.
- 3) MEs do not make full use of public support-based financing instruments. There is a diverse offer of such FIs, and ALTUM as the principal intermediary has enough capacity to offer support to a much larger number of MEs than it presently does.
- 4) MEs may be experiencing difficulties in obtaining public support in the form of different FIs. They are likely to be caused by lack of knowledge or awareness of the options for obtaining the required

funding through ALTUM. The MEs feel insecure, discouraged and lack assurance in addressing their needs to ALTUM.

For meaningful public support-based FIs targeting micro-businesses, policy makers should consider the following:

- 1) The offer addressed to MEs should differ from the offer to larger size companies. In practice, the state aid programmes helpful for most SMEs are not always well-adapted to MEs.
- 2) Access to finance is complicated by the differences between MEs (incl. in their business cycle, geographical location). Local and regional factors also have an impact on demand.
- 3) Previous experience in the uptake of EU funds would be a useful resource for developing and improving the support programmes and financing instruments already recognized for their value and demanded by companies. Also, the support instruments should be adapted to the current needs of MEs in a timely way.

A focussed financial offer for the MEs in Latvia should draw on in-depth studies of causalities, the current needs of MEs and the reasons why MEs choose or avoid applying for external funding in the form of public support-based financial instruments.

## Bibliography

1. ALTUM (2020). Biznesa uzsaceju petijums 2020.02.25 (Business Startups Study 2020.02.25). Retrieved: <https://www.slideshare.net/ALTUMlv/biznesa-uzsaceju-ptijums-20200225>. Access: 01.03.2020.
2. Beck, T., Demirgüç-Kunt, A. (2006) Small and Medium-Size Enterprises: Access to Finance as a Growth Constraint. *Journal of Banking & Finance*, Volume 30, Issue 11, November 2006, pp. 2931-2943.
3. Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. (2008) Financing Patterns Around the World: are Small Firms Different?, *Journal of Financial Economics*, Volume 89, Issue 3, September 2008, pp. 467-487.
4. Brown, R., Lee, N. (2017). The Theory and Practice of Financial Instruments for Small and Medium-Sized Enterprises. *EC-OECD Seminar Series on Designing better economic development policies for regions and cities*. OECD. 28 June 2017. Retrieved: [https://www.oecd.org/cfe/regional-policy/Brown\\_When-to-use-financial-instruments.pdf](https://www.oecd.org/cfe/regional-policy/Brown_When-to-use-financial-instruments.pdf). Access: 20.01.2020.
5. Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, Volume 19, Issue 2, March 2004, pp. 261-283
6. **Central Statistical Bureau of Latvia** (2019). SRG030. Economically Active Enterprises of Market Sector in Statistical Regions, Cities and Counties by Size Group According to the Number of Employees and Main Economic Activity (NACE Rev. 2). Retrieved: [http://data1.csb.gov.lv/pxweb/en/uzn/uzn\\_01\\_skaitis/?rxid=d8284c56-0641-451c-8b70-b6297b58f464&tablelist=true](http://data1.csb.gov.lv/pxweb/en/uzn/uzn_01_skaitis/?rxid=d8284c56-0641-451c-8b70-b6297b58f464&tablelist=true). Access: 18.12.2019.
7. Ernst&Young Baltic, Ltd. (2018). Contribution and Impact of EU Support to Entrepreneurship in the 2007-2013 Period. Evaluation Final Report (LV). (Original title: Nosleguma izvertējums: Eiropas Savienības fondu ieguldījumu izvertesana uzņēmējdarbības atbalstam 2007. – 2013. gada planosanas perioda un so ieguldījumu ietekmes noteiksana). *Latvijas Republikas Finanšu ministrija*, 06.07.2018. Retrieved: [https://ec.europa.eu/regional\\_policy/en/policy/evaluations/member-states/](https://ec.europa.eu/regional_policy/en/policy/evaluations/member-states/). Access: 09.02.2020.
8. European Central Bank (2019). Survey on the Access to Finance of Enterprises in the Euro Area. April to September 2019. November 2019. Retrieved: [https://www.ecb.europa.eu/stats/ecb\\_surveys/safe/html/index.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html). Access: 30.01.2020.
9. Firmas.lv, LETA (2018). Latvijas biznesa gada parskats 2018 (Latvian Business Annual Report 2018), pp. 32-33. *Firmas.lv*. Retrieved: [https://www.firmas.lv/files/lbgp/2018/LBGP\\_2018.pdf](https://www.firmas.lv/files/lbgp/2018/LBGP_2018.pdf). Access: 28.11.2019.
10. GatewayBaltic, Ltd. (2019). Latvijas jaunuznemumu ekosistemas novertesana, pasreizeja stavokla identificasana un uz tas balstitu priekslikumumu izstrade (Assessing the Ecosystem of Start-ups in Latvia, Identification of the Current Situation and Development of Proposals), id.nr. EM 2018/58, *Ekonomikas ministrija*, 08.02.2019. Retrieved: [https://www.em.gov.lv/files/attachments/2019-03-27\\_11\\_46\\_18\\_Jaunuznemumu\\_petijums.pdf](https://www.em.gov.lv/files/attachments/2019-03-27_11_46_18_Jaunuznemumu_petijums.pdf). Access: 16.02.2020.
11. Hall, G. C., Hutchinson, P. J., Michaelas, N. (2000). Industry Effects on the Determinants of Unquoted SMEs' Capital Structure. *International Journal of the Economics of Business*. Volume 7 (3): pp. 297-312.
12. Investment and Development Agency of Latvia (2020). *Atbalstito jaunuznemumu registrs (Register of supported start-ups)*. Retrieved: <http://www.liaa.gov.lv/lv/fondi/2014-2020/jaunuznemumu-atbalst-programmas/atbalstito-jaunuznemumu-registrs>. Access: 29.02.2020.
13. Klein, M., Neitzert, F., Hartmann-Wendels, T., Kraus, S. (2020). Start-up Financing in the Digital Age—A Systematic Review and Comparison of New Forms of Financing. *The Journal of Entrepreneurial Finance*. Volume 22, No. 1 (Spring 2020), pp. 1-26.

14. Kraemer-Eis, H., Botsari, A., Gvetadze, S., Lang, F., Torfs, W. (2019). European Small Business Finance Outlook: December 2019 (Working Paper 2019/061). *EIF Research & Market Analysis*. Retrieved: [https://www.eif.org/news\\_centre/publications/EIF\\_Working\\_Paper\\_2019\\_61.htm](https://www.eif.org/news_centre/publications/EIF_Working_Paper_2019_61.htm). Access: 18.02.2020.
15. Krauklis, V. A. (2019). Vai Nacionālais attīstības plans veicinas attīstību vai depopulāciju? (Will the National Development Plan Promote Development or Depopulation?). *RACA*. 01.02.2019. Retrieved: <http://raca.lv/vai-nacionalais-attistibas-plans-veicinas-attistibu-vai-depopulaciju/>. Access: 19.12.2019.
16. Kwaak, T., Cheikh, N., de Kok, J., Kruithof, B., Sniijders, J., Stoilova, V. (2019). Survey on the Access to Finance of Enterprises (SAFE). Analytical Report 2019. November 2019. *European Commission*. Retrieved: <https://ec.europa.eu/growth/access-to-finance/data-surveys>. Access: 18.12.2019.
17. Masiak, C., Block, J.H., Moritz, A., Lang, F. and Kraemer-Eis, H. (2017a), Financing Micro Firms in Europe: An Empirical Analysis. Working Paper 2017/44, *EIF Research & Market Analysis*. Retrieved: [http://www.eif.org/news\\_centre/publications/eif\\_wp\\_44.pdf](http://www.eif.org/news_centre/publications/eif_wp_44.pdf). Access: 18.12.2019.
18. Masiak, C., Moritz, A., Lang, F. (2017b). Financing Patterns of European SMEs Revisited: An Updated Empirical Taxonomy and Determinants of SME Financing Clusters. Working Paper 2017/40, *EIF Research & Market Analysis*. Retrieved: [http://www.eif.org/news\\_centre/research/index.htm](http://www.eif.org/news_centre/research/index.htm). Access: 18.12.2019.
19. Moritz, A., Block, J. H., Heinz, A. (2016). Financing Patterns of European SMEs - an Empirical Taxonomy. *Venture Capital*, Volume 18, Issue 2, pp. 115-148.
20. Ministry of Economics of the Republic of Latvia (2017). An Updated Market Gap Assessment in the Field of Financial Accessibility: Progress Report on Implementation of Financial Instrument Programs. Riga, 2017. Retrieved: [https://www.em.gov.lv/files/es\\_fondi/MoE\\_Market\\_gap\\_assessment\\_specified\\_26102017.pdf](https://www.em.gov.lv/files/es_fondi/MoE_Market_gap_assessment_specified_26102017.pdf). Access: 15.11.2019.
21. Ministry of Economics of the Republic of Latvia (2019a). Atbalsta pasākumi 2014-2020 (Support Measures for 2014-2020). 04.03.2019. Retrieved: [https://www.em.gov.lv/lv/es\\_fondi/atbalsta\\_pasakumi\\_2014\\_2020/](https://www.em.gov.lv/lv/es_fondi/atbalsta_pasakumi_2014_2020/). Access: 18.12.2020.
22. Ministry of Economics of the Republic of Latvia (2019b). Norvegijas finansu instrumenta līdzfinansētas programmas "Uzņēmējdarbības attīstība, inovācijas un mazie un vidējie uzņēmumi" koncepcijas projekts (Concept Project of the Norwegian Financial Instrument Co-financed Program "Entrepreneurship Development, Innovation and Small and Medium Enterprises"). Retrieved: <http://tap.mk.gov.lv/lv/mk/tap/?pid=40476439&mode=mk&date=2019-08-27>. Access: 18.12.2019.
23. OECD (2018). Enhancing SME Access to Diversified financing Instruments. Discussion Paper, *SME Ministerial Conference*, 22-23 February 2018. Mexico City. Retrieved: <https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Plenary-Session-2.pdf>. Access: 20.10.2019.
24. Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012. *Official Journal of the European Union*, L 193/1, 30.7.2018, pp. 1-222.
25. Ruchkina, G., Melnichuk, M., Frumina, S., Mentel, G. (2017). Small and Medium Enterprises in Regional Development and Innovations. *Journal of International Studies*, Vol. 10, No. 4, pp. 259-271.
26. Schiffer, M., Weder, B. (2001). Firm Size and the Business Environment: Worldwide Survey Results. International Finance Corporation. Discussion paper no. IFD 43. August 2001. *The World Bank*. Retrieved: <http://documents.worldbank.org/curated/en/574601468739143195/Firm-size-and-the-business-environment-worldwide-survey-results>. Access: 15.01.2020.
27. Vanags, J., Linde, Ņ., Rivža, B., Sūniņa, L. (2018). Petījums par uzņēmējdarbības atbalsta sistēmas ieviešanas iespējām Latvija un Lietuva (Study on Business Support System Implementation Possibilities in Latvia and Lithuania). *Latvijas Zinatņu akadēmijas Ekonomikas institūts*, Rīga, 2018. Retrieved: <https://www.zemgale.lv/informativie-materiali/category/21-petijumi?download=408:petijums-par-uznemejdarbibas-atbalsta-pieejamibu-zemgale-kurzeme-un-ziemellietuva>. Access: 14.01.2020.

## TOPICALITY OF CRAFTS IN THE DEVELOPMENT OF JELGAVA OLD TOWN QUARTER

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**Abstract.** The development of small towns in Latvia is strongly affected by the growth of the tourism industry. New tourism products and sightseeing objects are created to develop local tourism and increase the number of visitors to cities/regions owing to municipal support. It has been found that in artisanal quarters, product sales and educational masterclasses create a new added value for tourism, thereby contributing to the sustainable development of the area. The first part of the research explained the role of crafts and artisans in urban development. The second part of the research performed a comparison of the operational patterns of current houses and centres of crafts, conducted an expert survey of administrators of the houses and centres of crafts and identified the demand for artisan products by the population and their interests in the development of the Jelgava Old Town street quarter. The research has concluded that in order for crafts to survive, national and local government support is needed for creating houses, centres, quarters and streets of crafts, improving the infrastructure for artisans to work and for tourists to visit them. Municipalities need to develop and implement a policy and a programme for craft development. Crafts have transformed into the cultural industry and in many autonomous communities, the craft competences have merged with tourism and contributed to a broad supply of products and have become important for the development of the area. Overall, the number of visitors to some Jelgava city tourism facilities increased in 2018, yet the total number of visitors decreased. This indicates that the city needs new local tourism facilities. Four operational patterns of houses and centres of crafts were identified in Latvia. Crafts as an important and supportive activity to be developed are incorporated in a number of European, national, Zemgale planning region, Jelgava city and region development strategies and programmes, thereby emphasizing the support needed for traditional artisan activities. Respondents highly rated the need for a house of crafts in the Jelgava Old Town street quarter – 45% expressed very convincing opinions, while 42% rated it as average. The main benefits in the context of craft functions pertain to the cultural and historical heritage and social value. Further research studies are needed to analyse the economic and creative/innovative functions of crafts.

**Keywords:** crafts, artisan, functions.

**JEL code:** R110

### Introduction

The development of small towns in Latvia is largely based on the supply of tourism services. Jelgava is the fourth largest city in Latvia with a population of 61 thou. inhabitants and an area of 60 km<sup>2</sup> and is located 40 km from the capital city of Riga. Jelgava city has a long and rich history, and its tourists are offered modern solutions to getting familiarised with historical stories as well as active recreation in the calm waters of Zemgale. The following local tourist attractions are available in Jelgava city – the Holy Trinity Church Tower, the Jelgava Palace Museum, the Jelgava History and Art Museum named after G. Eliass, the Family Vault of the Dukes of Courland, the Adolfs Alunans Memorial Museum, the Jelgava Exhibition of the Latvian Railway History Museum, the Historical Vehicles Museum of Anru Motors Ltd, the Jelgava Firefighting Museum, the Mental Health Care History Museum of the Gintermuiza Hospital, the Palaces of Jelgava and Valdeka, the Manor House Villa Medem, churches of various denominations, historical monuments and sightseeing places, cultural sites, companies and farms open to visitors, nature and parks. Jelgava city has a well-landscaped Post Island, and a variety of events are organized there throughout the year, attracting local and foreign tourists, e.g. the annual International Ice and Sand Sculpture Festivals, the annual Latvian Milk, Honey and Bread Festival, the Seedling Days etc. According to data of Jelgava Regional Tourist

Information Centre, 106.3 thou. tourists visited Jelgava city in 2018, which was 6 % fewer than in 2017 and 8 % fewer than in 2016. The most visited tourist attractions in Jelgava city in 2018 were as follows: the Holy Trinity Church Tower with 35 thou. visitors, the Caramel Workshop with 29 thou. visitors and the Jelgava History and Art Museum with 21 thou. visitors. Overall, the number of visitors to some Jelgava city facilities increased in 2018, whereas the total number of visitors to Jelgava decreased (Jelgava municipality, 2019). This indicates that Jelgava city needs new tourist attractions. Jelgava city was severely damaged during the Second World War, yet one historic quarter with 19<sup>th</sup> century wooden buildings and street pavement has survived the war. To increase the number of tourists and extend the length of tourist stays in Jelgava, it is planned to restore historical wooden buildings in the historical part of Jelgava Old Town, thereby creating new tourist attractions: the Restoration Centre at 14 Old Town Street and the House of Crafts in K.Barons Street. The municipality develops this tourism attraction through European Regional Development Fund project No.5.5.1.0/17/I/002 Preservation and Development of a Significant Cultural and Historical Heritage for Improving the Supply of Cultural Tourism in Zemgale Region. The total cost of the project is EUR 7.1 mln., incl. ERDF funding of EUR 2.4 mln. and municipal funding of EUR 4.5 mln. The Jelgava Old Town House of Crafts plans to concentrate various kinds of artisans in one place; the artisans would be closer to the flow of tourism in the city, and new tourism products would be created in the city. The demand for artisan products as a component of local tourism products has been little researched in Latvia. The authors did a theoretical and empirical examination of the role of the house of crafts and artisan services in urban development. The **aim of the research** is to identify the role of market demand for artisan services in the development of the Jelgava Old Town House of Crafts. **Research tasks:** 1) to identify and analyse theoretical findings and legal documents on the role of demand for crafts and artisans in urban development; 2) to identify the developments in and specifics of crafts by means of an expert and population survey and analyse the qualitative and quantitative indicators of the market demand. The **research object** is the development of Jelgava Old Town. The **research subject** is the need for the House of Crafts in Jelgava Old Town. The novelty of the research lies in the uniqueness of the data collected and analysed, as to date no information on the role of the Jelgava Old Town House of Crafts has been collected and analysed. Research methods: content analysis of theoretical and Internet sources, the abstract method, qualitative and quantitative analysis, data processing and interpretation by means of statistical analysis methods: data grouping, comparison and calculation of factors. The analysis period: 2019. Data sources: Jelgava City Council, Jelgava Regional Tourist Information Centre, a survey of residents of Jelgava city and Jelgava municipality as well as other areas of Latvia and a survey of administrators of 10 houses and centres of crafts in Latvia. The research question is as follows: does Jelgava Old Town need a house of crafts?

### **Research results and discussion**

To understand a house of crafts as a component of local tourism, the following terms were theoretically examined: artisan, crafts, craft items and craft functions.

Artisan:

- in accordance with the Handicrafts Law (1993), individuals and legal entities have the right to the title "artisan" or "craft master";
- in Latvia, the profession of artisan is listed in the National Classification of Occupations (LM, 2017);

- Latvia has developed a system specifying the way how to become an artisan, qualifying for various levels of craftsmanship (Jankova, Lazdins, Auzina, 2018).

Crafts:

- represent the professional activity of individuals in occupations, the list of which is approved by the Cabinet; some restrictions are imposed on acquiring the title "artisan" or "craft master" (Handicrafts Law, 1993);
- legal documents define a craft enterprise as an economic operator engaged in crafts. Latvia has developed a system specifying the way how to become an artisan, qualifying for various levels of craftsmanship (Jankova, Lazdins, Auzina, 2018);
- crafts represent diverse meanings and perspectives. According to the public good approach, artisans create things with a certain "value added" (Development, 2014);
- crafts represent a production industry capable of developing by using local inputs, thereby contributing to the development of national specificities both in terms of culture and production. A production method that maximizes the exploitation of local resources and serves for selling unique products that have evolved and retained a set of physical, economic, social capabilities under the guidance of a single specialist (LAK, 2019).

#### **Craft items:**

- represent national technical knowledge and aesthetic prerequisites that reflect the product's association with the essential characteristics of its community. They give testimonies of secular knowledge passed on through generations, whereby some objects whose dimensions, materials, techniques and ornaments are still being developed represent a particular nation's world view (Nilsson, 2019);
- are recognized as unique in the national and international markets. They contribute to the visibility of Latvia and demonstrate the national identity. To produce contemporary craft products, artisans employ state-of-the-art technologies and materials; the products are different from mass-produced, unique, of high quality and individualistic (Development, 2014).

In many countries around the world, crafts are supported by governmental cultural and tourism policies, and significant investments are made in urban or other areas to operate centres, houses, streets and whole quarters of crafts and arts. Municipalities construct the infrastructure for artisans to operate (F. Ammar (2017) (Tunisia), F. Baez, L. Collin (1981) (Mexico), M. Bilgin, E. Demir, M. Lau, C. Kin-Man, Z. Zhang (2011) (Turkey), J. Divandari, A. Danaeinia, P. Izadi (2017) (India). As regards craft functions, the authors combined the theoretical characteristics of crafts (Table 1), which express the diverse functions of crafts. Each function adds a new value to the craft, creating a value chain (Guffog, 2016).

The importance of crafts at the European Union level was emphasized already in 2016. The project (ERDF) Central Baltic Crafts has found that there are artisans who would like to use their skills, yet they lack opportunities to develop the skills to meet the needs of buyers and sell their products effectively. Besides, most craft items are sold at fairs or souvenir shops and only during summer – the tourism season. To provide support for artisans and provide them with a place where to work, teach, learn, share experience and hold seminars and exhibitions, they need the infrastructure that the artisans themselves cannot afford (Europe, 2016). Crafts as an important and supportive occupation to be developed are incorporated in a number of national laws and regulations, as well as in the strategies and programmes of the planning regions, cities and municipalities of Latvia. An

analysis of various national legal documents – the Handicrafts Law (1993), Cabinet regulation No. 762 Regulation regarding Occupations in which the Professional Activity of a Person is Considered to be Crafts (2009), the Intangible Cultural Heritage Law (2016), the UNESCO International Multilateral Convention for the Safeguarding of the Intangible Cultural Heritage (2006) – stress that traditional artisans need support from the national and municipal governments to build necessary infrastructures. EU-funded projects implemented in the period 2012-2027 also play an important role.

Table 1

**Functions and characteristics of crafts**

No.	Functions	Value	Authors
1.	Cultural, historical and educational	Ancient skills and cultural heritage are preserved through developing products/services; ancient skills are a symbol of national identity traditions; societal cultural identity competences are built up and passed on to future generations.	Nilsson, 2019, Barbora, 2017
2.	Innovative and creative	High value-added products/services are virtually and intelligently created and sold by creative industries. New craft products in terms of design are developed by using modern technologies. Latvian identity, cultural heritage, ethnographic signs and "sources" of natural wealth give inspiration and information while taking care of preserving, developing and transferring ancient, traditional and long-term skills and knowledge.	Development, 2014, Divandari, 2017, Sandell, 2016
3.	Economic and social	Crafts represent the kind of economic activity whereby artisans sell their products or services and pay taxes; the artisans belong to economic entities, and their enterprises provide jobs, reduce social tension in the area and represent creators of economic and social values.	Divandari, 2017, Ammar, 2017, Hadgich, 2005, Jeroscenkova et al., 2015
4.	Regional and urban development	A recognizable image of a locality – a city, a municipality or a region – is created, the environment is used sustainably, brownfields are regenerated, the environment for tourism is transformed. Adjacent areas and services are developed, and business activity is facilitated. A higher value-added could be generated in the area.	Danosa, 2019
5.	Tourism and marketing	Tourist attractions – houses, centres, associations and quarters of crafts – represent new tourism products and marketing elements. Focus is placed on customer (buyer, tourist etc.) needs.	Lukich et al., 2015, Dutton, 1983

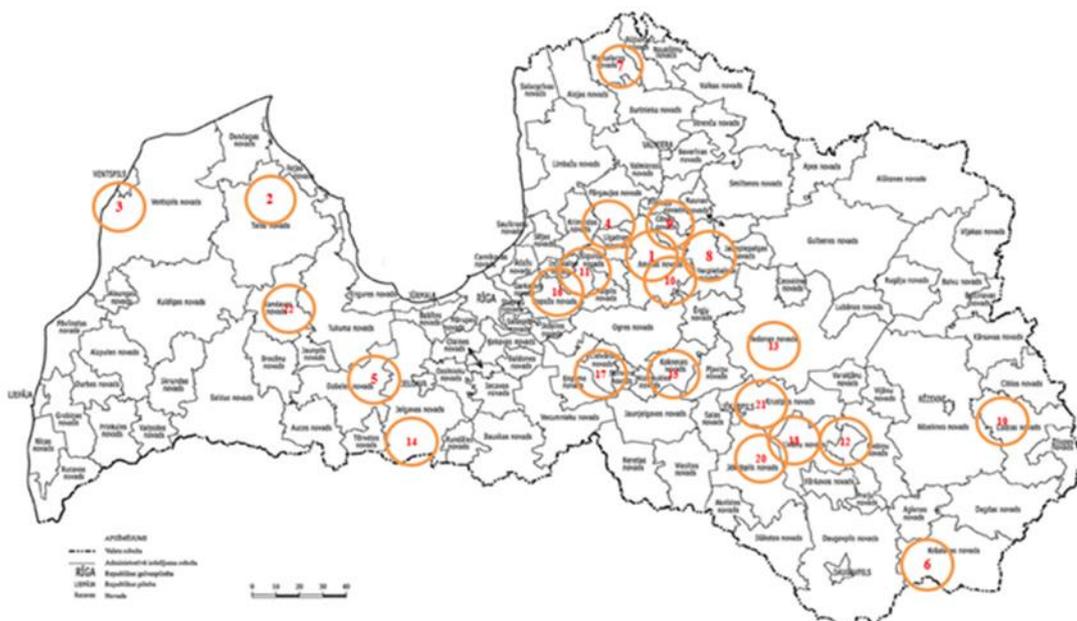
Source: authors' compilation

The National Development Plan of Latvia for 2013-2020 (NDP, 2012) emphasizes unique cultural and creative human capital resources as factors of competitive non-agricultural entrepreneurship and identifies courses of action to **support traditional artisans** in developing products and services by employing tangible and intangible heritage. The responsible institutions are the Ministry of Agriculture (MoA), the Ministry of Culture (MoC), the Ministry of Education Science (MoES), local governments, social partners and non-governmental organizations (NDP, 2012). The Informative Report on the Interim Assessment of the Implementation of the Guidelines for Tourism Development in Latvia for 2014-2020 in the period 2014-2016 stresses the need for new tourism products with high added value for the competitiveness and quality of national tourism products (Informative, 2017).

The Sustainable Development Strategy of Zemgale Planning Region for 2015-2030 stresses that Zemgale planning region has **long traditions** of industrial production and **crafts**. The economic profile of Zemgale Planning Region encompasses four main specializations, one of which is tourism and crafts as a brand of regional identity (Zemgale, 2014). The strategic part of the Development Programme of Zemgale Planning Region for 2015-2020 (2015) states that workshops or houses of

crafts as well as individual artisans operate in every municipality of Zemgale planning region. Crafts and home production are promising segments of the economy that should be consolidated in the future by developing a unified network of regional artisans and home producers, increasing the competitiveness of local products in various markets and expanding the supply of tourism products made in the region, specifically in the fields of crafts, home production and rural tourism. It is required to **support the development of crafts**, home production and the cultural and creative industries (Zemgale, 2015). An analysis of relevant legislative acts, as well as planning and policy documents allows concluding that all the documents analysed indicate that crafts as an occupation should be developed and promoted. The idea of developing the Jelgava Old Town street quarter is not in contradiction with the legal and policy documents. An analysis of national experience is required to understand the need for houses and centres of crafts in the region.

**Houses and centres of crafts in Latvia.** At present, there are 280 houses and centres of crafts in Latvia (Handcrafts of Latvia). An analysis of the information available on the websites of the houses and centres of crafts reveals that the geographical distribution of the houses and centres of crafts in the regions of Latvia are not homogenous (Figure 1). The houses and centres of crafts are mostly located in Latgale (65 %) and Vidzeme (19 %) planning regions, followed by Kurzeme (9 %) and Zemgale (7 %) planning regions. An analysis of the kinds of economic activity in which artisans are engaged reveals that the kinds are very diverse – various activities related to traditional culture, crafts, the Latvian way of life, household skills and culinary heritage are carried out by the artisans. They offer seasonal celebrations, family fun programmes – weddings, baptisms and trips with lectures and demonstrations. They also offer to master historical craft skills such as weaving, musical instrument making, ceramics, photography, paper making, woodworking, bread and flour product making, meat, fish processing, wine, cider and vodka making, knitting, crocheting, weaving, jewellery making, metal processing, confectionery and chocolate making etc. in workshops and master classes.



**Source:** authors' construction *Handcrafts of Latvia*

Fig. 1. **Geographical distribution of houses of crafts in the municipalities of Latvia**

There are five artisan centres in Jelgava municipality where everyone has an opportunity to master the skills of weaving, crocheting, beading, loom knitting etc. There is a pottery workshop,

woodworking and leather processing workshops and a centre of applied arts. Jelgava city does not have its own craft centre.

An expert survey was conducted to identify the need for houses of crafts in Latvia. Ten experts from the planning regions of Latvia participated in the survey. Two experts from each of the planning regions who practically administrated homes or centres of crafts were randomly selected for the survey. Questions were asked by telephone, and they related to the operational patterns and financing of houses and centres of crafts, changes in the visitor flow, the practical application of the craft skills built up, production marketing, cooperation among artisans and craft functions. Summarizing the views and experience of the experts allows identifying four most common operational patterns for homes and centres of crafts:

- 1) homes and centres of crafts are established and maintained by municipalities in municipal premises. The cost of maintenance is covered from municipal budgets. The municipality hires employees. External funding from the EU and other funds is attracted for municipal development;
- 2) homes and centres of crafts are maintained by municipalities in municipal premises. The municipality rents premises out to artisans – legal entities: LtDs, foundations and associations. The municipality supports legal entities by lower rents and by hiring educators. Houses and centres of crafts are maintained from their own revenue. External funding from the EU and other funds is attracted for municipal development;
- 3) homes and centres of crafts are established and maintained by legal entities: LtDs, foundations and associations. Houses and centres of crafts are maintained from their own revenue. External funding from the EU and other funds is attracted for municipal development;
- 4) homes and centres of crafts are established and maintained by private persons who are economic operators and patent payers. The maintenance is provided by means of donations from visitors. External funding from the EU and other funds as well as support programmes for municipalities is attracted for municipal development.

According to the experts, the flow of visitors to the houses and centres of crafts has increased since 2013. Domestic and foreign tourists have become more interested in crafts. The skills built up at the houses and centres of crafts have contributed to expanding the product assortment of local entrepreneurs, and new tourism products have been designed as a result of operation of the houses and centres of crafts. Artisans were reluctant to cooperate with each other to market their products. Artisans used to sell their products during fairs and local and regional festivals as well as to tourist groups. The administrators believed that the homes and centres of crafts performed mostly the cultural, historical and educational functions of crafts in the sense of their diverse values. They did not deny that the value generation approach was applied to economic, social and territorial development. The homes and centres of crafts did not count their visitors and had difficulty in collecting data on the economic and social benefits they generated.

In September and October 2019, a survey was conducted to find out the opinions of inhabitants of Latvia, including Jelgava municipality and Jelgava city, on the need for a house of crafts in the Jelgava Old Town street quarter. The questionnaires could be filled in person or electronically. Totally, 193 respondents were surveyed, the respondents had to rate 16 assertions on a 10-point scale developed by Fishbein (1967), with 1 being the least important and 10 the most important. The assertions to be rated by respondents pertained to five groups of functions of crafts (Table 1). In addition, the respondents were requested to give their opinions on whether the creation and operation of a house of crafts in Jelgava require national and local government support, or whether

the visitors of the quarter of crafts are ready to participate in paid classes delivered at the house of crafts. The survey data were processed using MS Excel. The total score was computed for the assertions of each function group. The results of the survey were processed using also a quantitative method for product consumption value determination. The computations were based on the methodology used to determine the consumption value of a product (Praude, Linina, 2018).

$$PV_i = \sum_{j=1}^n (a_{ij} \times B_{ij}) \quad (1.1)$$

where  $PV_i$  – consumption value of the  $i$ -th product;  $n$  – number of qualities of the function group rated;  $a_{ij}$  – properties of the  $i$ -th product,  $j$  – importance factor;  $B_{ij}$  – properties of the  $i$ -th product rating in points.

A summary of the survey results is shown in Table 2. The importance factor for a craft function from the perspective of respondents was obtained by multiplying the ratings of the assertions of each function group ( $a_{ij}$ ). An analysis of the results revealed that three in ten respondents preferred craft functions such as cultural, historical and educational (0.3) and regional and urban development (0.3). Two in ten respondents strongly believed that the development of the Jelgava Old Town street quarter should be funded from the national and municipal budgets.

An analysis of the results for the assertions of each function group revealed that the respondents were not ready to participate in paid craft skills development, which indicated that a large part of the public expected the municipality to cover all expenses related to the services of the house of crafts from its budget. A comparison of the ratings of each craft function group ( $B_{ij}$ ) revealed that the respondent opinions on function groups 1 through 5, as well as their importance perceived by the respondents were similar, whereas function group 6 was rated the lowest. The average consumption values ( $PV_i$ ) computed for the craft functions revealed the demand for various function groups; the respondents preferred the cultural, historical and education function (5.1) and the regional and urban development function (5.1), followed by the funding model (3.0), which means that the development and maintenance of the quarter of crafts has to be funded by the municipality.

Table 2

**Functional values of crafts**

No.	Name of the craft function	Weights of craft functions from respondent perspective ( $a_{ij}$ )	Ratings of craft functions 1,2,3,4,5,6, % ( $B_{ij}$ )	Consumption value of the craft function ( $PV_i$ )
1	<b>Cultural, historical and educational</b>	0.3	17	5.1
2	<b>Innovative and creative</b>	0.1	18	1.8
3	<b>Economic and social</b>	0.1	17	1.7
4	<b>Regional and urban development</b>	0.3	17	5.1
5	<b>Tourism and marketing</b>	0.1	17	1.7
6	<b>Funding model for the quarter of crafts</b>	0.2	15	3
7	<b>Total</b>	<b>1</b>	<b>100</b>	-

Source: authors' calculations

The respondents rated the innovative and creative function (1.8), the economic and social function (1.7) and the tourism and marketing function (1.7) twice as low. However, average ratings dominated, which were relatively biased. Further research is needed to continue exploring the public's perception that craft skills training should be provided through interest-related education

and funded by the municipality. Once these skills are acquired within a family, the skills are expected to be passed on from generation to generation.

### **Conclusions, proposals, recommendations**

- 1) Summarizing and analysing the theoretical findings on the topicality of the demand for crafts in urban areas, it can be concluded that crafts promote the socio-economic development of the territory.
- 2) Theoretical findings refer of crafts to the value generation approach to be applied to economic, social and territorial development. In many countries around the world, crafts are supported by governmental cultural and tourism policies, and significant investments are made in urban or other areas to operate centres, houses, streets and whole quarters of crafts and arts.
- 3) Summarizing and analysing normative documents on the topicality of demand for crafts and crafts in the development of Europe, Latvia and Jelgava, it can be concluded that crafts as an important, supportable and development able activity is embedded in a number of European, Latvian, Zemgale planning region, Jelgava city and county development strategies and programs emphasize the need for support for traditional craft activities.
- 4) The respondents highly rated the need for a house of crafts in the Jelgava Old Town street quarter; 45% expressed very convincing opinions, while 42 % rated it as average. The main benefits in the context of craft functions are the cultural and historical heritage and social value.
- 5) The respondents (92 %) almost unanimously believed that the development and maintenance of the Jelgava Old Town House of Crafts have to be funded by the national and local governments.
- 6) Based on the data collected in the field of crafts, it is important for local governments to develop a policy for the management of centres of crafts in order to continue attracting financial support from the EU Funds.
- 7) The research found that a house of crafts is needed in the Jelgava Old Town street quarter, and the current 19 artisans of Zemgale region and five artisans of Jelgava municipality could be potential entities for the house of crafts.

### **Bibliography**

1. Ammar, F. (2017). The Growth Factors of Tunisian Handicraft Small and Medium-sized Enterprises (Smes): towards an Integration. *International Journal of Technology Management & Sustainable Development*. Vol. 16 Issue 3, pp. 229-248.
2. Baez, F., Collin, L. (1981). Artes Populares e Indigenismo. *Mexico Indigena*, 50. Retrieved: [http://www.pasosonline.org/Publicados/13215/PS0213\\_8.pdf](http://www.pasosonline.org/Publicados/13215/PS0213_8.pdf). Access:02.10.2019.
3. Barbora, P. (2017). Identity, Tradition, and Revitalization of American Indian Cultures. Retrieved: <http://ezproxy.llu.lv:2108/ehost/ebookviewer/ebook/ZTAwMHh3d19fMTU1NjIxN19fQU41?sid=d75bae3a-3c48-43d8-a0fa-95c41f8e49cf@sessionmgr103&vid=8&format=EB&rid=1>. Access:02.10.2019.
4. Bilgin, M., Demir, E., Lau, M., Kin-Man To, C., Zhang, Z. (2011). The Turkish Handmade Carpet Industry: Analysis in Comparison with Select Asian Countries. *Journal of the Textile Institute*, 102 (6), pp 514-526.
5. Danosa, D. (2019). Pieredzejuma turisms – mazpilsetu veiksmes atslega (Experienced Tourism – the Key to Small-Town Success). Retrieved: <https://ir.lv/2019/08/12/pieredzejuma-turisms-mazpilsetu-veiksmes-atslega/>. Access:02.10.2019.
6. Divandari, J., Danaeinia, A., Izadi, P. (2017). Analysis of the Role of Handicraft Production in Rural Sustainable Development: A Case of Sar Aqa Seyyed, Chaharmahal and Bakhtiari Province. *Journal of History, Culture & Art Research / Tarih Kultur ve Sanat Arastirmalari Dergisi*. Special issue, Vol. 6 Issue 1, pp. 549-565.
7. Dutton, R. (1983). Handicrafts in Oman and Their Role in Rural Community Development. *Geoforum*, 14 (3), pp. 341-352.
8. Fishbein, M.(1967). Behavior Theory Approach to The Relations in Attitude Measurement. Reading in Attitude Theory Measurement. New York:John Wolley.
9. Guffog, T. (2016). Building Effective Value Chains : Value and Its Management. London : Kogan Page. Retrieved: <http://ezproxy.llu.lv:2139/ehost/resultsadvanced?vid=2&sid=adcf497-4617-48c8-888f-48e4125f1f17%40sdc-v->

- sessmgr01&bquery=value+chain&bdata=JmRiPWuWMDb4d3cmdHlwZT0xJnNIYXJjaE1vZGU9U3RhbmRhcmQmc2l0ZT1laG9zdC1saXZl. Access:18.12.2019.
10. Hadgich, O. (2005). Kulturni turizam. (Cultural Tourism). Novi Sad: Univerzitet u Novom Sadu, Prirodno-matematički fakultet, Departman za geografiju, turizam i hotelijerstvo.
  11. Handcrafts of Latvia. Retrieved: <https://www.celotajs.lv/lv/c/brand/agriheritage/detailed/crafts?0>. Access: 15.01.2020.
  12. Informative Report on The Interim Assessment of the Implementation of the Guidelines for the Development of Tourism in Latvia for the Period 2014-2020.) (2014). Retrieved: [https://www.em.gov.lv/files/turisms/EMZin\\_181217\\_TUR\\_pamn\\_novert.pdf](https://www.em.gov.lv/files/turisms/EMZin_181217_TUR_pamn_novert.pdf). Access:18.12.2019.
  13. Jankova, L., Lazdins, A., Auzina, A. (2018). Activity of Master Craftsmen in Latvia. Proceedings of the International scientific conference "Economic science for rural development", Jelgava, May 9-11, 2018 / Latvia University of Life Sciences and Technologies. Faculty of Economics and Social Development. Jelgava, 2018. Nr. 47 : Rural development and entrepreneurship. Production and co-operation in agriculture. pp. 108-114.
  14. Jelgavas pilseetas pašvaldība (Jelgava Municipality) (2019). Retrieved: <https://www.jelgava.lv/lv/pasvaldiba/dokumenti/projekti/2020-gads/>. Access:18.12.2019.
  15. Jelgavas Reģionālais turisma informācijas centrs (Jelgava Regional Tourism Information Centre) (2019). Statistika (Statistic). Apskates objekti. Retrieved: [https://www.jelgava.lv/files/jrtc\\_statistika\\_2016.pdf](https://www.jelgava.lv/files/jrtc_statistika_2016.pdf). Access:18.12.2019.
  16. Jeroscenoka, L., Rivza, B., Kruzmetra, M., Melece, L., Spaks, A., Artsiusheuski, M. (2015). The VALUE OF CULTURAL HERITAGE: THE STATE IN BELARUS AND LATVIA. Proceedings of the 25th NJF Congress, Nordic View to Sustainable Rural Development. pp.481- 488.
  17. Latvijas Amatniecības kamera (Latvian Chamber of Crafts)(LAK) (2019). ĪSS APSKATS PAR LAK. Retrieved: <http://www.lak.lv/pub/?id=97>. Access: 18.12.2019.
  18. Lukich, T., Stojanovich, T., Derchan, B., Zhivkovich M., Zivkovich, J.(2015). The Geographical Aspects of Traditional Handicrafts in Serbia European Researcher. 2015, Vol. 100 Issue 11, p747-758. 12p. DOI: 10.13187/er.2015.100.747. Database: Academic Search Complete.
  19. National Development Plan of Latvia for 2013-2020 (NDP, 2012). Retrieved: <https://likumi.lv/doc.php?id=253919>. Access: 15.01.2020.
  20. Nemateriāla Kultūras mantojuma likums (Intangible Cultural Heritage Law) (2016). LR likums. Retrieved: <https://likumi.lv/ta/id/285526-nemateriala-kulturas-mantojuma-likums>. Access: 15.01.2020.
  21. Nilsson, I., Reid, N. (2019). The Value of a Craft Brewery: On the Relationship Between Craft Breweries and Property Values. Detail Only Available Academic Journal, Growth & Change. Jun2019, Vol. 50 Issue 2, pp. 689-704.
  22. Noteikumi par amatiem, kuros personas profesionāla darbība ir uzskatāma par amatniecību (The Provisions of Posts Which Personal Professional Activity is Considered as Crafts). MK noteikumi (Regulations of Minister Cabinet) nr. 762 (14.07.2009.). Retrieved: <https://likumi.lv/doc.php?id=194944>. Access: 15.01.2020.
  23. Par Amatniecību (Handicrafts Law) (1993). LR likums. Retrieved: <https://likumi.lv/doc.php?id=63052>. Access: 15.01.2020.
  24. Praude, V., Linina, I. (2018). Paardosanas vadiiba (Sales Management). R: Turiiba, pp. 217-221.
  25. Rekomendāciju izstrāde par amatniecības nozares aarzemju labaas prakses paarnemsanu Latvijaa (Development of Recommendations on the Transfer of Foreign Good Practices of the Crafts Sector in Latvia)(2014). Zemgales plaanošanas regions. Peetijums finanseets INTERREG IVC programmas projekta „Regionaalaa sadarbiba amatniecibas attiistiibai” / Regional Cooperation for Crafts' Development” ietvaros. Pasutijuma ligums Nr. 12/1-14.2/112, 21.11.2012.
  26. Sandell, T., Skarveli, L. (2016). Mapping Exercise: How Could Creative Industries Foster Innovation in Tourism in the Northern Dimension Area? Retrieved: <https://www.ndpculture.org/media/W1siZiIsIjIwMTcvMDIvMjAvMm9iNGR1N2Y4NF9Dcm9zc19jb3VudHJ5X3JlCg9ydC5wZGYxV0/Cross-country%20report.pdf?sha=0d0b01455ac1799e>. Access: 18.12.2019.
  27. UNESCO International Multilateral Convention for the Safeguarding of the Intangible Cultural Heritage (2006) Retrieved: <https://likumi.lv/ta/lv/starptautiskie-ligumi/id/1533>. Access: 15.01.2020.
  28. Zemgales plaanosanas regiona attiistiibas programma 2015-2020 (Development Programme of Zemgale Planning Region for 2015-2020) STRATĒĢISKĀ DAĻA (2015). APSTIPRINĀTA ar 18.08.2015. ZPRP lēmumu Nr. 131 (protokols Nr. 27).
  29. Zemgales plaanosanas regiona ilgtspeejigas attiistiibas strateegija 2015-2030 (Zemgale Planning Region Sustainable Development Strategy 2015-2030) (2014). APSTIPRINĀTA ar 18.08.2015. ZPRP leemumu Nr. 130 (protokols Nr. 27).

## FACTORS CONTRIBUTING TO THE REGIONAL DEVELOPMENT OF E-COMMERCE IN LATVIA

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**Abstract.** E-commerce contributes to the improvement of communications between the company, producers, distributors and customers. However, it should be noted that success in e-commerce depends upon determining effective factors in e-commerce. There is a set of effective inside organisational and outside organisational factors in e-commerce which should be taken into consideration during the development of e-commerce.

According to the recent results of DESI Index, Latvia lags behind the EU average on integration of digital technology by businesses. Despite excellent connectivity and good digital public services, Latvian SMEs do not use effectively online selling, social media, cloud computing and big data possibilities. At the same time, it is recognised nationally that e-commerce provides good opportunities to develop business, including in the regions. Taking into account the before-mentioned, the aim of the paper is to analyse the factors contribution to the development of e-commerce in the regions in Latvia.

Main results of the research: in general, factor groups "Technological development" and "Social factors (human skills)" were assessed the highest among Latvian entrepreneurs. Such individual factors as desire to develop, employee knowledge, and managerial attitude, technological development in the world, and managerial knowledge and existence of financial resources in the company were evaluated the highest in terms of effect on usage of e-commerce in the business. In case of regional cross-cut, in Kurzeme, Riga and Latgale regions entrepreneurs are rather in favour of technological development factors affecting the usage of e-commerce, while entrepreneurs in Zemgale and Vidzeme regions think that social factors affect the development of e-commerce the most.

**Key words:** e-commerce, regions, Latvia, regional development.

**JEL code:** L81, P25

### Introduction

In order to ensure development, companies and organisations have to find a way to be competitive. According to Almousa (2013), "e-commerce is expected to be one of the important keys to the success and growth in the current competitive business environment". E-commerce is regarded as an appropriate strategy for marketing, selling and integrating online services which can play a significant role in identifying, obtaining and maintaining customers (Choshin and Ghaffari, 2017). In addition, e-commerce, which plays an outstanding role in global economic affairs (Feizollahi, Shirmohammadi, Kahreh, & Kaherh, 2014). Furthermore, e-commerce has produced fundamental changes in business view in terms of better production and better relationship between customers and producers (Yang, Pang, Liu, Yen, & Tarn, 2015).

Numerous studies have addressed the issues why SMEs do not use e-commerce possibilities (Dahbi and Benmoussa, 2019). Concerning organisational factors such aspects as CEO/ Managers attitude (Abdul Hameed & Counsell, 2012), lack of top-management support, limitation of employees' IS knowledge (Zaied, 2012) were examined. As regards technological factors, studies are focused on lack of IT/ e-commerce infrastructure (Lawrence et al, 2010). At the same time, customers are concerned by language and content barriers as well as lack of secure payment infrastructure (Lawrence et al., 2010). In addition, customer and supplier pressure is considered as a barrier to e-commerce adoption (Rahayu & Day, 2015) as well as government regulations (Wresch & Fraser, 2011). Recent study of Dahbi and Benmoussa (2019) showed that the technological and

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financial factors are the most influential ones in context of barriers to e-commerce adoption among SMEs.

Dyerson et al. offers following classification of factors affecting e-commerce development for SMEs:

- Scientific factors: this class of factors includes the executive managers' knowledge and experiences, employees' expertise, customers' perceptions and awareness;
- Environmental factors: this group of factors includes markets, rules of government, producers and customers;
- Human factors: this category is related to the accessibility and application of internal resources and the number of specialist employees;
- Technical factors: this class of factors includes technology, costs and security (Dyerson, Harindranath, & Barnes, 2009).

Another barriers for domestic and cross-border e-commerce from the point of view of customers are highlighted by Gefen (2000), Gomez-Herrera et al. (2014), Cardona, et al. (2015), Valarezo et al. (2018) and PayPal (2019): little familiarity and trust in the vendor, crossing language barriers, need of a secure way to pay, cost-efficiency of parcel delivery, and costs shown in different currency, among others.

In case of Latvia, according to the DESI Index 2019, only 10 % of SMEs in Latvia sell online, slightly less than in 2017 and below the EU average of 17%. The percentage of SMEs selling cross-border remains below the EU average (only 5 % of total SMEs, against 8 % in the EU as a whole) and only an average of 5 % of SMEs turnover comes from the online segment. Only 13 % of enterprises use social media, while 8 % use big data (European Commission, 2020).

Research question: What are the main factors that contribute to the development of e-commerce in the region of Latvia?

Taking into account the before-mentioned, the aim of the paper is to analyse the factors contribution to the development of e-commerce in the regions in Latvia.

Tasks are formulated as follows:

- 1) to review scientific background and empirical research on factors contribution to the development of e-commerce;
- 2) to analyse the factors that enhance the development of e-commerce in regions of Latvia;
- 3) to provide recommendations to regional enterprises on development of e-commerce.

In order to achieve the aim, following research methods have been used: scientific literature studies, statistical data analysis, survey.

Delimitations of the research: the subject of the research is SMEs that represent all regions of Latvia (Riga, Kurzeme, Zemgale, Vidzeme, Latgale).

Main information sources: primary data: business survey; secondary data: scientific literature, published studies, political planning documents and normative legal acts, as well as official statistical databases.

Novelty and topicality of the research includes assessment of various factors by Latvian entrepreneurs analysed in the regional cut.

## **Research results and discussion**

In order to analyse the use of e-commerce opportunities by Latvian entrepreneurs, a survey of entrepreneurs on factors contributing to the development of e-commerce was developed. The aim of

the survey was to find out what factors influence the use of e-commerce in Latvian companies, incl. how these factors vary depending on the region in which the company operates. The survey was conducted from November 2019 to January 2020. In total, 77 companies participated in the survey representing all regions of Latvia as well as various sectors of national economy.

The survey was conducted electronically using an e-platform tool *WebropolSurveys*.

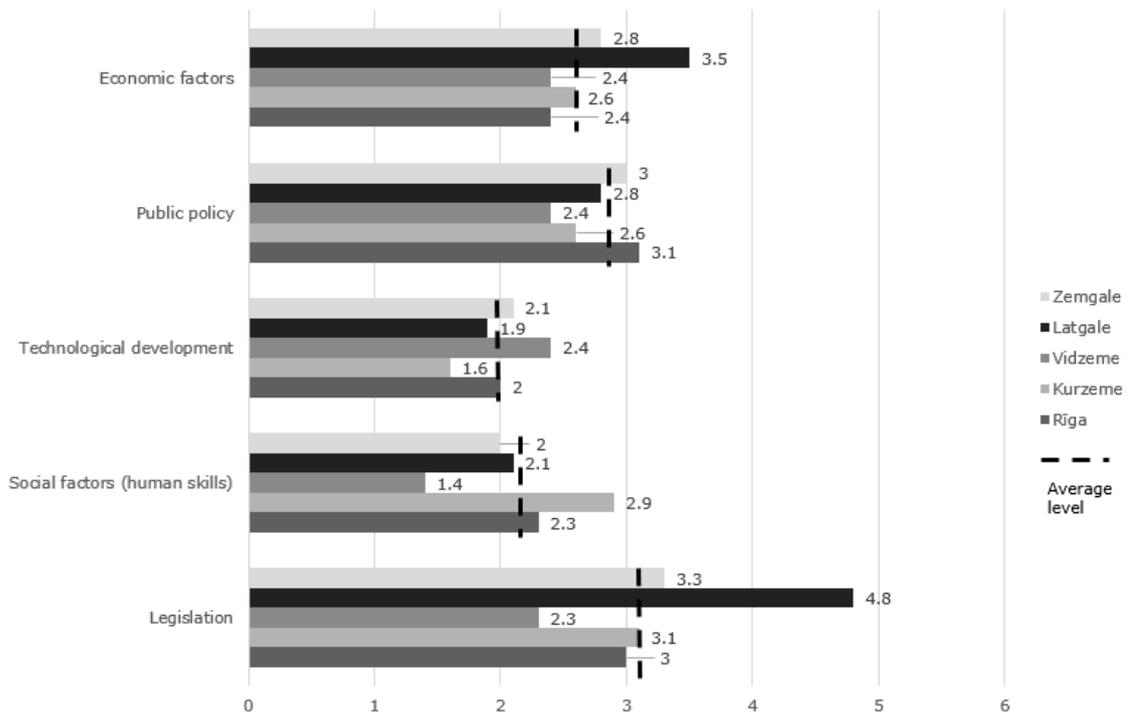
In order to ensure the representativeness of the survey results, a sample of companies was created, which could represent the general population - Latvian companies in general. To ensure this, the following criteria were put forward:

- 1) Type of business activity;
- 2) Number of employees in the company;
- 3) Place of incorporation (regional cut: Riga, Zemgale, Kurzeme, Latgale and Vidzeme regions).

The survey was developed on the basis of the results of an expert survey on the impact of various factors on the use of e-commerce in the commercial activities of Latvian companies, organised by the authors in March 2019 (Rivza et. al, 2019).

### **1. Factor groups affecting the development of e-commerce for regional SMEs in Latvia**

First, the entrepreneurs were asked about the importance of corresponding factor groups that influence e-commerce development (see Fig. 1). In general, the factor groups "Technological development" and "Social factors (human skills)" were assessed the highest. Respondents admitted that factor group "Legislation" do not have significant impact on development of e-commerce. In case of regional cross-cut, in Kurzeme, Riga and Latgale regions entrepreneurs are rather in favour of technological development factors affecting the usage of e-commerce, while entrepreneurs in Zemgale and Vidzeme regions think that social factors affect the development of e-commerce the most. Initial comparison of results shows that among the regions there are mostly differences in the assessment of the factor groups "Social factors" and "Legislation".



Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

Fig. 1. Answers to the question "Please rank the groups of impact factors in order of importance (1 is the most important) that most influence e-commerce development" – regional cut

In order to analyse if there are difference among the regions in assessment of factor groups, the F test on sample variations was conducted. Its results showed that in all cases the F value was less than the critical F value. This means that the null hypothesis of cannot be rejected at significance level  $\alpha = 0.05$  and the variations in the sample (distribution of entrepreneurs by regions) are equal to the overall enterprise sample.

Next, a t test was performed on the mean of the two samples, namely, the null hypothesis ( $H_0$ ) was put forward that the mean of the two samples (ratings of the entrepreneurs of the respective region against the total ratings) for each group of factors is equal at the significance level  $\alpha = 0.05$  (Tab. 1).

Table 1

**Results of t-Test Two-Sample Assuming Equal Variances  
 (group of factors) by regional cut**

Factor group	t statistical value	t critical value	Result
<b>Rīga</b>			
Economic factors	0.742	1.980	Ho cannot be rejected
Public policy	0.692	1.981	Ho cannot be rejected
Technological development	0.051	1.980	Ho cannot be rejected
Social factors	0.322	1.980	Ho cannot be rejected
Legislation	0.630	1.980	Ho cannot be rejected
<b>Kurzeme</b>			
Economic factors	0.038	1.989	Ho cannot be rejected
Public policy	0.616	1.989	Ho cannot be rejected
Technological development	0.819	1.988	Ho cannot be rejected
Social factors	1.445	1.988	Ho cannot be rejected
Legislation	0.070	1.989	Ho cannot be rejected
<b>Vidzeme</b>			
Economic factors	0.326	1.988	Ho cannot be rejected
Public policy	1.063	1.989	Ho cannot be rejected
Technological development	0.951	1.988	Ho cannot be rejected
Social factors	1.671	1.988	Ho cannot be rejected
Legislation	1.840	1.988	Ho cannot be rejected
<b>Latgale</b>			
Economic factors	1.778	1.989	Ho cannot be rejected
Public policy	0.332	1.989	Ho cannot be rejected
Technological development	0.290	1.988	Ho cannot be rejected
Social factors	0.126	1.989	Ho cannot be rejected
Legislation	3.460	1.989	Reject the H <sub>0</sub>
<b>Zemgale</b>			
Economic factors	0.419	1.988	Ho cannot be rejected
Public policy	0.269	1.988	Ho cannot be rejected
Technological development	0.476	1.988	Ho cannot be rejected
Social factors	0.158	1.988	Ho cannot be rejected
Legislation	0.331	1.988	Ho cannot be rejected

Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

The results of the t test showed that only in case of Latgale region the factor group "Legislation" statistically differs from overall ratings, it means that entrepreneurs in Latgale region indicated that factor group "Legislation" is the least important factor that affects the development of e-commerce.

## 2. Factors affecting the use of e-commerce for regional SMEs in Latvia

Next, the analysis was conducted on individual factors. Table 2 illustrates the evaluation of entrepreneurs for individual factors that affect the use of e-commerce in their business. Overall results showed that, half of the companies considered the following factors to be very important (rating "9") for the use of e-commerce: mobile network coverage, employee skills, managerial attitude, willingness to develop, employee knowledge, managerial knowledge. The highest average scores are for the following factors: desire to develop (8.16), employee knowledge (8.12), managerial attitude (7.99), technological development in the world (7.96), and managerial knowledge (7.87) and existence of financial resources in the company (7.82).

According to the surveyed companies, the least important factors in the development of e-commerce are the leader of non-governmental organisations (average rating - 4.25), the activity of non-governmental organisations (4.63), the leader in the municipality (4.73), and local government policy (4.75).

In order to identify, if overall results statistically differ among the regions, at first step those factors (for regions) which scores differ by 20% from average scores were selected.

Table 2

**Answers to the question "Please rate on a scale of 1 (not significant) to 9 (very important), factors that you think affect the use of e-commerce in your business" – regional cut**

Factor	Riga	Kurzeme	Vidzeme	Latgale	Zemgale
Development of telecommunications network	7.1	6.1	8.3	8.1	7.9
Cellular network coverage	7.3	7.1	8.2	8.6	8.2
Employees' skills	7.9	5.9	9.1	8.3	7.2
Manager's skills	7.7	5.6	8.2	8.4	6.8
Manager's attitude	8.0	6.3	9.0	8.9	7.7
Creative atmosphere in the company	7.5	5.6	8.7	6.9	6.8
Competitors' activities	7.6	4.8	7.3	7.5	6.8
Positive success stories	6.5	5.8	6.9	7.8	5.8
State aid	5.4	7.4	8.8	7.1	7.0
Business environment in the country	6.8	7.6	7.9	7.0	7.5
Activities of non-governmental organisations	4.8	3.0	5.1	3.9	5.3
Availability of EU funds	5.2	7.0	6.9	7.3	5.7
EU policy	5.1	4.6	5.8	4.1	5.4
Local government policy	5.2	4.4	3.7	3.3	3.8
Existence of financial resources in the company	7.8	6.3	8.6	8.5	8.1
Desire to develop	8.4	6.4	8.8	9.0	7.4
Training opportunity for employee	7.7	5.9	8.6	8.3	7.0
Leader of the company	7.1	6.3	8.0	8.8	7.7
Leader of the municipality	5.4	3.4	4.1	4.3	4.0
Leader of the country	5.1	4.0	4.9	4.0	4.3
Leader of non-governmental organisations	4.7	3.5	4.3	3.3	3.9
Global market trends	8.0	6.5	7.6	7.8	7.3
Technology development in the world	8.2	6.9	8.3	8.1	7.5
Knowledge of employees	8.3	6.1	9.0	8.4	7.7
Manager's knowledge	7.9	6.9	8.7	8.4	7.4
Taxation policy	5.9	5.5	7.3	7.4	7.2
E-commerce legislation	7.2	6.9	8.4	8.5	7.5
Investment opportunities	6.9	6.3	8.4	8.4	6.9

\* marked average scores that are at least 20% higher (in light grey) or lower (in dark grey) than the average in the sample overall

Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

Entrepreneurs of Kurzeme and Latgale expressed the most different evaluations of the factors influencing e-commerce. The opinions of entrepreneurs in Riga and Zemgale were not so different from the opinions of Latvian entrepreneurs on the importance of factors in the development of e-commerce.

As second step, in order to find out whether there are significant differences between the surveyed entrepreneurs' assessment of the importance of certain factors in the development of e-commerce in the regional section, a F test on sample variations was first performed. Its results showed that in all cases the F value was less than the critical F value. This means that the null hypothesis of equal variations in the samples cannot be rejected at significance level  $\alpha = 0.05$  and the variations in the samples (distribution of entrepreneurs by regions) are the same.

Next, a t test was performed on the mean of the two samples, namely, the null hypothesis ( $H_0$ ) was put forward that the mean of the two samples (the respective region's ratings against the total ratings) for each factor is equal at the significance level  $\alpha = 0.05$ . The results are illustrated at Table 3.

Table 3

**Results of t-Test Two-Sample Assuming Equal Variances  
 (individual factors) by regional cut**

Factor	t statistical value	t critical value	Result
<b>Kurzeme</b>			
Employees' skills	2.176	1.989	Reject the H <sub>0</sub>
Manager's skills	1.772	1.989	Ho cannot be rejected
Manager's attitude	1.923	1.988	Ho cannot be rejected
Creative atmosphere in the company	1.713	1.989	Ho cannot be rejected
Competitors' activities	2.686	1.988	Reject the H <sub>0</sub>
Activities of non-governmental organizations	1.465	1.989	Ho cannot be rejected
Availability of EU funds	1.009	1.988	Ho cannot be rejected
Desire to develop	2.321	1.988	Reject the H <sub>0</sub>
Training opportunity for employee	2.101	1.988	Reject the H <sub>0</sub>
Leader in the municipality	1.229	1.988	Ho cannot be rejected
Knowledge of employees	2.450	1.988	Reject the H <sub>0</sub>
<b>Vidzeme</b>			
Creative atmosphere in the company	1.627	1.988	Ho cannot be rejected
State aid	2.375	1.988	Reject the H <sub>0</sub>
<b>Latgale</b>			
Positive success stories	1.328	1.988	Ho cannot be rejected
Availability of EU funds	1.247	1.988	Ho cannot be rejected
Local government policy	1.218	1.989	Ho cannot be rejected
Leader of the company	1.442	1.988	Ho cannot be rejected
Leader of non-governmental organizations	0.873	1.989	Ho cannot be rejected

**Source: business survey, number of respondents - 77; research period: November 2019 - January 2020**

As can be seen in Table 3, significant differences in the regional breakdown for entrepreneurs are due to the following factors:

- Employees' skills (for Kurzeme entrepreneurs);
- Competitors' activities (for Kurzeme entrepreneurs);
- Willingness to develop (for Kurzeme entrepreneurs);
- Training opportunity for employees (for Kurzeme entrepreneurs);
- Knowledge of employees (for Kurzeme entrepreneurs);
- State aid (for Vidzeme entrepreneurs).

In other cases, the assessment of the importance of e-commerce factors in different regions of Latvia does not differ significantly from the overall assessment.

To sum up, for Riga entrepreneurs the most important factors regarding usage of e-commerce are desire to develop (average score – 8.4), knowledge of employees (8.3), technology development in the world (8.2), manager's attitude (8.0) and global market trends (8.0). At the same time, Kurzeme entrepreneurs assessed factors lower. The most important factors for them are business environment in the country (average score – 7.6), state aid (7.4), cellular network coverage (7.1) and availability of EU funds (7.0). Regarding Vidzeme entrepreneurs, the most important factors regarding usage of e-commerce are knowledge of employees (average score - 9.0), manager's attitude (9.0), desire to develop (8.8), manager's knowledge (8.7), and creative atmosphere in the company (8.7). As concerns Latgale entrepreneurs, the most important factors are desire to develop (average score – 9.0), manager's attitude (8.9), leader of the company (8.8), and Cellular network coverage (8.6). Regarding Zemgale entrepreneurs, the most important factors are Cellular network coverage (average score - 8.2), existence of financial resources in the company (8.1), as well as development of telecommunications network (7.9).

## Conclusions, proposals, recommendations

- 1) The literature review showed the most important factor groups that affect the use of e-commerce are technological development, organisational, legislation, and economic factors. At the same time, language and content barriers as well as lack of secure payment infrastructure are considered as significant barriers avoiding to adapt e-commerce.
- 2) Conducted survey demonstrated that, in general, factor groups "Technological development" and "Social factors (human skills)" are the most important for Latvian entrepreneurs regarding the development of the e-commerce. In case of regional cross-cut, in Kurzeme, Riga and Latgale regions entrepreneurs are rather in favour of technological development factors affecting the usage of e-commerce, while entrepreneurs in Zemgale and Vidzeme regions think that social factors affect the development of e-commerce the most.
- 3) Survey results showed that such individual factors as desire to develop, employee knowledge, and managerial attitude, technological development in the world, and managerial knowledge and existence of financial resources in the company were evaluated the highest in terms of effect on usage of e-commerce in the business.
- 4) The analysis of individual factors showed that the evaluations of Kurzeme region entrepreneurs varied the most from general evaluations. Entrepreneurs from Kurzeme region finds business environment in the country, state aid cellular network coverage and availability of EU funds the most important regarding the use of e-commerce in their business, while in the rest of Latvia the most important factors are desire to develop, technology development in the world, knowledge of employees and manager's attitude.

## Bibliography

1. Abdul Hameed, M., Counsell, S. (2012). Assessing the Influence of Environmental and CEO characteristics for adoption of information technology in organizations. *Journal of Technology Management & Innovation*, Volume 7, Issue 1, pp. 64-84.
2. Almousa, M. (2013). Barriers to E-Commerce Adoption: Consumers' Perspectives from a Developing Country. *iBusiness*, Volume 5, Issue 2, pp. 65-71.
3. Choshin, M., Ghaffari, A. (2017). An Investigation of the Impact of Effective Factors on the Success of E-Commerce in Small- and Medium-Sized Companies. *Computers in Human Behavior*, Volume 66, pp. 67-74.
4. Dahbi, S., Benmoussa, C. (2019). What Hinder SMEs from Adopting E-commerce? A Multiple Case Analysis. *Procedia Computer Science*, Volume 158, pp.811-818.
5. European Commission (2020). Digital Economy and Society Index (DESI) 2019 Country Report – Latvia. Retrieved: [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=59899](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=59899) Access: 05.03.2020
6. Feizollahi, S., Shirmohammadi, A., Kahreh, Z.S., Kaherh, M.S. (2014). Investigation the Effect of Internet Technology on Performance of Services Organizations with e-commerce Orientations. *Procedia - Social and Behavioral Sciences*, Volume 109, pp. 605-609.
7. Gefen, D. (2000). E-commerce: The Role of Familiarity and Trust. *Omega*, Volume 28, Issue 6, pp. 725-737.
8. Gomez-Herrera, E., Martens, B., Turlea, G. (2014). The Drivers and Impediments for Cross-Border E-Commerce in the EU, *Information Economics and Policy*, Volume 28, pp. 83-96.
9. Lawrence, J. E., Tar, U. A. (2010). Barriers to E-commerce in Developing Countries. *Information, Society and Justice Journal*, Volume 3, Issue 1, pp. 23-35.
10. M. Cardona, M., Duch-Brown, N., Francois, J., Martens, B., Yang, F. (2015). The Macro-Economic Impact of E-Commerce in the EU Digital Single Market. *Institute for prospective technological studies digital economy working paper 2015/09*. Retrieved: <https://www.econstor.eu/bitstream/10419/202210/1/jrc-dewp201509.pdf> Assess: 09.03.2020.
11. PayPal (2018). PayPal Cross-Border Consumer Research 2018. Retrieved: [https://www.paypalobjects.com/digitalassets/c/website/marketing/global/shared/global/media-resources/documents/PayPal\\_Insights\\_2018\\_Global\\_Report.pdf](https://www.paypalobjects.com/digitalassets/c/website/marketing/global/shared/global/media-resources/documents/PayPal_Insights_2018_Global_Report.pdf) Access: 09.03.2020.
12. Rahayu, R., Day, J. (2015). Determinant Factors of E-commerce Adoption by SMEs in Developing Country: Evidence from Indonesia. *Procedia - Social and Behavioral Sciences*, Volume 195, pp. 142-150.
13. Rivza, B., Kruzmetra, M., Gudele, I., Foris, D. (2019). *Digitalization as an Essential Growth Factor Contributing in SME Development (Experience of Latvia and Romania)*. *Agronomy Research*, Volume 17, Issue 1, pp. 261-270.

14. Valarezo, A., Pérez-Amaral, T., Garín-Muñoz T., Herguera García, I., López, R. (2018). Drivers and barriers to cross-border e-commerce: Evidence from Spanish individual behavior. *Telecommunications Policy*, Volume 42, Issue 6, pp. 464-473.
15. Wresch, W., Fraser, S. (2011). Persistent Barriers to E-Commerce in Developing Countries: A Longitudinal Study of Efforts by Caribbean Companies. *Journal of Global Information Management*, Volume 19, Issue 3, pp. 30 - 44.
16. Yang, Q., Pang, C., Liu, L., Yen, D.C., J., Tarn, J.M. (2015). Exploring Consumer Perceived Risk and Trust for Online Payments: An Empirical Study in China's Younger Generation. *Computers in Human Behavior*, Volume 50, pp. 9-24.
17. Zaied, A. N. H. (2012). Barriers to E-Commerce Adoption in Egyptian SMEs. *International Journal of Information Engineering and Electronic Business*, Volume 4, Issue 3, pp. 9-19.

## REDUCTION OF NON-VALUE ADDED ACTIVITIES IN RESTAURANT SERVICES: THE CASE OF BBS-DIZAIN LTD

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**Abstract.** In order to ensure the development and competitiveness of an organization, it is essential to continuously enhance processes, particularly those that generate revenue, i.e. business processes, as well as to introduce innovations. One of the business processes at BBS-Dizain Ltd that needs to be enhanced is the catering service. The aim of the research is to examine possibilities for shortening order processing times at BBS-Dizain Ltd. The research concluded that the average rating of order processing time at the restaurant given by the employees of BBS-Dizain Ltd (internal customers) was higher (4 points) than the rating given by visitors (external customers) (3.49 points). A contingency analysis showed that there was no correlation between the ratings given by external and internal customers; therefore, the restaurant's personnel did not critically assess their performance in terms of order processing time. Since changes in the demand for the dishes on the menu of the restaurant exceeded 25%, and none of the dishes on the menu was a leader in terms of revenue generated, there were no dishes, the cooking process of which BBS-Dizain Ltd needed to optimize. The chefs of BBS-Dizain Ltd could enhance their skills in preparing Group AY meals, as the demand for them was relatively steady. Rearranging the workplace of a chef, using the 5S methodology, and replacing the worktop for the chef with a freezer allows significantly – two-fold – reducing the number of the steps made during the shift. However, rearranging the restaurant's storeroom, using the 5S methodology, allows saving 95 % time spent on searching for things needed. Therefore, the possibilities to reduce order processing times at the restaurant of BBS-Dizain Ltd involve decreasing unnecessary movements of chefs at their workplaces and reducing the time spent on searching for things in the storeroom.

**Key words:** customer, business process, quality, optimization.

**JEL code:** M21, L15.

### Introduction

Any entrepreneur or businessperson wants to attract and retain consumers and increase the turnover, market share and profit, while any consumer wants to get the needed goods at the needed place and time and in the needed quantity as well as to get the required quality of service. In order to ensure the development and competitiveness of an organization, including BBS – Dizain Ltd, it is essential to continuously enhance processes, particularly those that generate revenue, i.e. business processes, as well as to introduce innovations.

The following research **hypothesis** is put forward: an analysis of business processes allows identifying opportunities for enhancement.

One of the business processes at BBS-Dizain Ltd that needs to be enhanced is the catering service.

The **aim** of the research is to examine possibilities for shortening order processing times at BBS-Dizain Ltd.

**Specific research tasks:** (1) to justify the need to shorten order processing times at BBS-Dizain Ltd; (2) to test the enhancements identified for the purpose of shortening order processing times; (3) to identify which restaurant cooking process needs to be optimized.

The research employed general scientific research methods, statistical analysis, logical construction, analysis and synthesis as well as experimental methods. The research used unpublished data provided by BBS-Dizain Ltd for the period 01/01/2019-31/12/2019, as well as primary data acquired during the experiments conducted by the authors.

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## Research results and discussion

### 1. Need for the research

Upon starting the research on restaurant service enhancement possibilities at BBS-Dizain Ltd, the authors found, based on consumer satisfaction ratings, that the following three components of restaurant performance are the most important for customers: **food quality** (5 points), **waiting time** (4.90 points) and personnel attitude (4.89) (Jurgena et al., 2019). After analysing customer satisfaction tree components with regard to **quality**, the authors concluded that the customers rated table arrangement (2.93 points) and **waiting time** (3.49 points) the lowest. The other components were rated at 4 points and higher. The average rating of the restaurant's service quality was high – 4.48 points (Jurgena et al., 2019).

The customer satisfaction index, which was calculated by taking into account the number of respondents who rated the quality of the surveyed parameters at 5 and 4 points, showed that overall the customers of BBS-Dizain Ltd were satisfied with the restaurant's service quality (customer satisfaction index=88%), yet the ratings of **waiting time** were low: the customer satisfaction index was 42% out of 100% or it was more than two-fold lower than the average. Within the research, the restaurant's employees were also surveyed to find out the opinions of the employees or internal customers about the components of the consumer satisfaction tree with regard to quality.

The restaurant's employees rated the **importance of waiting time** at 4.69 points on a five-point scale (which means the rating was lower than that given by external customers) and **waiting time** at 4 points (higher than the external customers did). Since the employees themselves did not ensure a **high performance of the restaurant**, the survey results from both sets of the respondents were compared by doing a contingency analysis to test whether the ratings were dependent on the respondent group. Hypotheses to be tested:

H<sub>0</sub>: there is no correlation between the ratings given by customers and the employees;

H<sub>1</sub>: there is a correlation between the ratings given by customers and the employees.

Since  $\chi^2 = 5.32 < \chi^2_{0.05;3} = 7.81$ , the hypothesis H<sub>0</sub> may not be rejected; accordingly, there has to be concluded that there is no correlation between the ratings given by customers and the employees.

The maximum probability that the difference in ratings between the two respondent groups could be assumed to be significant is equal to 85 %. The authors conclude that the employees were not critical of their performance, and it was also necessary to convince the employees that there was room for enhancement, i.e. shortening waiting times, thereby pointing to a possibility to enhance the order processing process.

### 2. Testing the possibility to shorten waiting times

One way to shorten the waiting time for an order is to reduce the time it takes for a customer's dishes to be ordered.

After analysing the cooking process and its duration, it was concluded that it was possible to reduce the time spent on extra work or unnecessary movements, such as the chef's movements to his/her workplace for the necessary spices, kitchen utensils, inputs etc. In the LEAN system, "movements" are understood as any type of human movement that does not add value but requires both effort and time (Babris et al., 2016). The loss – unnecessary movements – could be minimized or avoided by rearranging the workplace, using the 5S methodology. In order to test the suggested enhancement – rearranging the chef's workplace to reduce the unnecessary movements – the authors made a count of the steps made by the same three-chef shift, using bracelets – step

counters, for 21 days (Chef 1 specialized in soups and main course supplements, Chef 2 – in main courses, Chef 3 – in salads and desserts).

In the first phase of the experiment, the steps made by the chefs before the workplaces had been rearranged were counted during the first seven days (within one chef's working week). At the beginning of the second phase of the experiment, minor changes were made in the workplaces of the chefs – in the arrangement of kitchen equipment and kitchen gadgets –, based on the results of the first phase and the recommendations of the chefs themselves. In addition, at the workplace of Chef 3, a worktop with a shelf system was replaced with a freezer with six drawers, the surface of which began to function as a worktop as well. The worktop was replaced only for Chef 3, as the experimenters had only one freezer at their disposal. After consulting the chefs, the decision was made to change the worktop for Chef 3, as the chef specialized in making salads, which were traditionally ordered as a first course meal at a restaurant, and this time should be shortened. In the second phase of the experiment, for 14 days (two weeks) in a row (days 8 to 21), the steps of the chefs were counted again. The results of the experiment are shown in Table 1.

Table 1

**Number of steps made by the chefs before and after the rearrangement of their workplaces at BBS-Dizain Ltd**

Indicator	Experiment				Difference between Phase I and Phase II average
	Phase I	Phase II			
	Days 1-7	Days 8-14	Days 15-21	Phase II average	
<b>Chef 1: soup and main course supplements</b>					
Number of orders	631	549	480	515	-116
Steps made, thou.	108.9	100.5	102.82	101.7	-7.2
Average number of steps made a day	15557	14357	14689	14523	-1034
<b>Chef 2: main courses</b>					
Number of orders	631	549	480	515	-116
Steps made, thou.	100.7	97.8	93.2	95.5	-5.2
Average number of steps made a day	14386	13971	13314	13643	-743
<b>Chef 3: salads and desserts</b>					
Number of orders	471	384	322	353	-118
Steps made, thou.	87.2	41.2	38.0	39.6	-47.6
Average number of steps made a day	12457	5886	5429	5657	-6800

**Source: experimental results**

The experimental data show that more activity in terms of number of steps made by all the three chefs was observed on Fridays (experimental days 4, 11, 18), as preparatory work was done in preparation for the weekend, Saturday and Sunday, when more orders were taken, and on Mondays (experimental days 7, 14, 21), when preparations were made for the change of a shift (room cleaning etc.).

As shown in Table 1, after the workplace was rearranged, the number of steps made by Chef 3 decreased by 6.8 thou. per day, or 55 %, which was significant progress. Chef 3 positively viewed the results and wanted to keep the workplace arrangement created for the experiment.

No significant positive effect was found for Chefs 2 and 3: the number of steps made by Chef 1 decreased by 1034 or 7 %, while for Chef 2 the decrease was 743 steps or 5 %. An analysis of the cooking process allows assuming that a significant decrease in the number of steps made by Chefs 1

and 2 could be observed if replacing a worktop with a shelf system with a freezer with six drawers at their workplaces.

In view of the fact that during order processing, including during the experiment, it was necessary for the chefs to find and bring various things from the kitchen's storeroom to their workplaces, it was assumed that the order processing time (cooking time) could also be reduced by reducing the time spent on searching for things in the storeroom. The authors conducted a second experiment – the time spent on finding necessary things was recorded by means of a stopwatch both before and after the rearrangement of the storeroom. The results of the experiment are shown in Table 2.

Table 2

**Average time spent by the chefs of BBS-Dizain Ltd on searching for things in the storeroom before and after the rearrangement of the storeroom**

Things needed	Time spent on finding things, seconds		Time savings,	
	before rearrangement	after rearrangement	seconds	%
Receipt tape for kitchen printers	227	3	224	99
Heat-retaining platform	141	5	136	96
Serving bowl	182	5	177	97

**Source: experimental results**

In the result of the experiment, it was found that the main problems regarding finding things in the storeroom for the chefs were because of:

- absence of signs on boxes and shelves in the storeroom;
- difficulty in finding things;
- presence of defective containers in the storeroom.

During the experiment, the storeroom was rearranged, using the 5S methodology, i.e. all the things in the storeroom were sorted, disposing of unnecessary things; the necessary things were arranged in a clear way, using visual guidance (boxes were labelled with the names and pictures of the things they contained; signs were placed on shelves, showing the things being placed on them). Before the storeroom was rearranged, the authors performed an analysis of the intensity of use of things to identify the most appropriate place for each thing: the things used less frequently were placed at farther corners, while the things needed more frequently were placed closer to the front door, and heavier items were placed on lower shelves. In the result of rearranging the storeroom, some space was freed up, which, upon the recommendation of the employees, was used for the storage of disposable containers formerly placed in the root vegetable storeroom, which was far away from the chefs' workplaces. Consequently, not only did it reduce the time it took to find more than 95% of the things, but it also reduced the number of steps to be made to bring disposable packaging and reduced the risk for the employees to get injured when carrying heavy things from the top shelves.

### 3. Analysis of the menu of the restaurant

An ABC - XYZ analysis of the dishes offered by the restaurant was performed, thereby identifying which product categories (dishes) were in demand and the changes in order to find out which food preparation processes the chefs could optimize in order to shorten the cooking times (Table 3).

Table 3

**ABC – XYZ combined analysis of BBS-Dizain Ltd products**

Indicator		Value Share		
		A (high)	B (moderate)	C (low)
Consumption	<b>X (constant)</b>	High value percentage Continuous demand High predictive value	Average value percentage Continuous demand High predictive value	Low value percentage Continuous demand High predictive value
	<b>Y (unsteady)</b>	High value percentage Fluctuating demand Average predictive value <b>7; 28; 23; 37; 13; 9; 4; 21; 51</b>	Average value percentage Fluctuating demand Average predictive value <b>44</b>	Low value percentage Fluctuating demand Average predictive value
	<b>Z (sporadic)</b>	High value percentage Irregular demand Low predictive value <b>18; 54; 27; 22; 8; 10; 16; 56; 57; 15; 50; 1; 48; 29; 20; 5; 43; 42; 30; 12; 35; 31; 38</b>	Average value percentage Irregular demand Low predictive value <b>40; 47; 25; 53; 58; 52; 49; 34; 2; 14; 11; 39; 32; 55</b>	Low value percentage Irregular demand Low predictive value <b>33; 6; 45; 26; 19; 24; 36; 3; 41</b>

*Notes: the research assigned a code (number) to each dish included in the menu according to their order in the menu*

*Source: author's calculations based on 2019 data provided by BBS-Dizain Ltd and Pandya &Thakkar, 2016*

An analysis of the data revealed that changes in the demand for most of the dishes were significant, i.e. more than 25 % (Group Z). There was no constant demand for any dish on the menu (Group X; changes in demand reached 10 %). Changes in the demand for nine dishes (Group AY) (i.e. Baked Salmon in Cream (7), Salmon Tartare (28), Lamb Soup with Vegetables (23), Bread with Herb Butter (37), Toasted Bread with Cheese Sauce (13), Creme Brulee (9), Cottage Cheese Dessert with Cranberry Sauce (4), Grilled Chicken Skewer (21), Strudel (51)) were medium, and the dishes belonged to a product group (Group A) that generated 80% of the restaurant's total revenue.

The proportion of revenue generated by each individual dish served by the restaurant in the total revenue was low, ranging from 4.5% (Grilled Pork Ribs (18)) to 0.1 % (Pasta without Sauce (41)), which means that none of the dishes offered by the restaurant was a leader in terms of revenue generated.

The authors might recommend the chefs to pay special attention to the nine dishes in Group AY, trying to optimize the cooking process and applying more skills in preparing the dishes, as the dishes generated the basic revenue for the restaurant and ensured a relatively steady demand.

**Conclusions and recommendations**

- 1) The average rating of order processing time at the restaurant given by the employees of BBS-Dizain Ltd (internal customers) was higher (4 points) than the rating given by visitors (external customers) (3.49 points). A contingency analysis showed that there was no correlation between the ratings given by external and internal customers; therefore, the restaurant's personnel did not critically assess their performance in terms of order processing time.
- 2) Since changes in the demand for the dishes on the menu of the restaurant exceeded 25 %, and none of the dishes on the menu was a leader in terms of revenue generated, there were no dishes, the cooking process of which BBS-Dizain Ltd needed to optimize. The chefs of BBS-Dizain Ltd could enhance their skills in preparing Group AY meals, as the demand for them was relatively steady.

- 3) Rearranging the workplace of a chef, using the 5S methodology, and replacing the worktop for the chef with a freezer allows significantly – two-fold – reducing the number of the steps made during the shift. However, rearranging the restaurant's storeroom, using the 5S methodology, allows saving 95 % time spent on searching for things needed. Therefore, the possibilities to reduce order processing times at the restaurant of BBS-Dizain Ltd involve decreasing unnecessary movements of chefs at their workplaces and reducing the time spent on searching for things in the storeroom.

### **Bibliography**

1. Babris S., Kalkis H., Murnieks J., Piekuss U. (2016) LEAN risinājumi efektīvakam biznesam. Monografija (LEAN Solutions for Effective Business. Monograph). Riga, 187 p.
2. BBS-Dizain Ltd. (2019). Internal data.
3. Gurel, D. A. (2013). A Conceptual Evaluation of 5S Model in Hotels. *African Journal of Business Management*, 7(30), 3035.
4. Jurgena, I., Muska, A., Jurjane, E. (2019). Ratings of Consumer Satisfaction: the Case of BBS-Dizain Ltd. Proceedings of the international scientific conference Economic Science for Rural Development, No. 50, pp. 78-83, Retrieved: [http://www.esaf.llu.lv/sites/esaf/files/files/lapas/Latvia\\_ESRD\\_50\\_2019.pdf](http://www.esaf.llu.lv/sites/esaf/files/files/lapas/Latvia_ESRD_50_2019.pdf). ISBN 9789984483207. ISSN 2255-9930. Access: 15.01.2020.
5. Pandya, B., & Thakkar, H. (2016). A Review on Inventory Management Control Techniques: ABC-XYZ analysis. *REST Journal on Emerging trends in Modelling and Manufacturing*, 2, 15. Retrieved: <http://restpublisher.com/wp-content/uploads/2016/09/A-Review-on-Inventory-Management-Control-Techniques-ABC-XYZ-Analysis.pdf>. Access: 15.01.2020.

## THEORETICAL CHARACTERISTICS OF USING LEVERAGE INSTRUMENTS IN THE CONTEXT OF RURAL ENTREPRENEURSHIP

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**Abstract.** Today, the matters pertaining to regional and urban development in the EU are increasingly integrated into EU development plans and strategies. The EU actively facilitates regional development by supporting the development of small and medium-sized enterprises in the regions to contribute to employment, education and social integration. The strategic goal of the National Development Plan of Latvia 2021-2027 is to promote also regional development in Latvia in order to ensure long-term balanced growth in the country. Promoting entrepreneurship in the regions is of great importance, as Latvia is still one of the countries in the European Union experiencing unbalanced regional development and having socio-economic disparities. Consequently, financial performance and financial stability play an important role in sustainable business development. Rural entrepreneurs whose business is seasonal often lack an awareness of the role of financial leverage degrees, which could lead to making wrong decisions. Performing an assessment of the degrees of financial leverage could be useful not only in a situation when experiencing a business expansion but also when a business decline occurs, which is specific to rural entrepreneurship.

A hypothesis of the present research is based on the authors' opinion that by meaningfully applying the degrees of financial leverage, it is possible to enhance the financial performance of enterprises, which is particularly important for rural entrepreneurship.

The aim of the research is to define the degrees of financial leverage – the degree of operating leverage (DOL), the degree of financial leverage (DFL) and the degree of combined leverage (DCL) – as measures of financial performance of enterprises and classify the principles of measure assessment in relation to whether the indicator percentage changes used in financial leverage calculations are positive or negative.

The research employed the following methods: induction – to make scientific assumptions and identify similarities based on individual elements – and deduction – to logically systematize and explain empirical data. Applying the empirical and logical construction methods, the authors analysed six different theoretically possible situations, gave six different examples, defined and classified the principles of leverage degree assessment as different (positive and negative) in relation to the indicator percentage changes used in financial leverage calculations.

**Key words:** financial performance, degree of operating leverage (DOL); degree of financial leverage (DFL); degree of combined leverage (DCL).

**JEL code:** M41

### Introduction

To contribute to growth, development, employment and the standard of living in rural areas, the rural development policy of the European Union sets objectives, which include raising the competitiveness of agriculture and achieving sustainable and balanced territorial development in rural areas. One of the objectives of the Common Agricultural Policy of the European Union is to ensure a relatively high standard of living for the rural population; therefore, business development and promotion in rural areas play an important role in the sustainable development of rural areas.

The latest research substantiates the importance of business development in promoting regional development. The research study *Regional Development through Entrepreneurial Exaptation: Epistemological Displacement, Affordances, and Collective Agency in Rural Regions* stresses that "the creation of growth and development in rural regions presents a key challenge for both researchers and policy makers" (Gaddefors J., et al. 2020). In their research study, the authors focus on the importance of expanding business as a mechanism for creating regional development in rural areas.

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Not only large enterprises but also small and medium ones and their expansion play an important role in regional development. The research studies focusing on profit efficiency and the factors affecting it, in small and medium enterprises in particular (Perez-Gmez, P., et al., 2018), reveal that enterprise size, export orientation, government support and productivity are positively related to the efficiency of small and medium enterprises.

The choice of the research topic was determined by the authors' opinion that financial leverage degrees are tools that could help rural entrepreneurs to monitor the financial performance of their enterprises, which is also an important factor in contributing to the financial success and value of the enterprise.

Scientists Modigliani and Miller, who each received a Nobel Prize in economics, concluded in their research that the value of a business should not depend on the structure of its capital. Financial risk arising from borrowed capital has to be managed by entrepreneurs in a way to ensure steady financial performance and effective business operation.

The authors of the paper have found that the matters pertaining to enterprise capital structure as well as the factors affecting decisions on optimal capital structure have been widely researched in fundamental literature (Amaro de M., J. (2001); Berk, J., et al. (2014); Brealey, R., et al. (2014); Brealey, R., et al. (2016); Corelly, A. (2016); Emery, D., R., et al. (1997); Hart, O. (1995); Jean Tirole (2006); Moyer, C., et al. (1998); Moles P., et al. (2011), Leibus (2019); Jones, C., P. (1992)).

The latest scientific research also focuses on financial leverage degrees as enterprise performance measures (Yang, R., et al. (2016), Stelk, S., et al. (2017), Sarkar, S. (2018), Li, Z., et al. (2016)).

The authors of the paper believe that that the problem of seasonality in rural entrepreneurship, which necessitates additional capital, irrespective of the capital structure of the enterprise (equity or borrowed capital), indicates the urgency to use financial leverage degrees to measure the financial performance of the enterprise.

A hypothesis of the present research is based on the authors' opinion that by meaningfully applying the degrees of financial leverage, it is possible to increase the financial performance of enterprises, which is particularly important for rural entrepreneurship.

The aim of the research is to define the degrees of financial leverage – the degree of operating leverage (DOL), the degree of financial leverage (DFL) and the degree of combined leverage (DCL) – as measures of financial performance of enterprises and classify the principles of measure assessment in relation to whether the indicator percentage changes used in financial leverage calculations are positive or negative.

The research employed the following methods: induction – to make scientific assumptions and identify similarities based on individual elements – and deduction – to logically systematize and explain empirical data. Applying the empirical and logical construction methods, the authors analysed six different theoretically possible situations, gave six different examples, defined and classified the principles of leverage degree assessment as different (positive and negative) in relation to the indicator percentage changes used in financial leverage calculations.

## **Research results and discussion**

Financial leverage degrees are calculated by dividing a percentage change in one indicator by a percentage change in another, so the result of the calculation indicates which rate of change is higher (the calculation employed profit and loss account indicators and EBIT). In analysing financial leverage

degrees, focus has to be placed on a percentage change in the numerator. Compared with a percentage change in the denominator, the percentage change in the numerator has to be larger or positive.

Formulas for calculating financial leverage degrees (1, 2 and 3) Jones, Charles, P. (1992) are given below.

A formula for calculating a degree of operating leverage (DOL):

$$\text{percentage change in EBIT} / \text{percentage change in net turnover} \quad (1).$$

A formula for calculating a degree of financial leverage (DFL):

$$\text{percentage change in net profit} / \text{percentage change in EBIT} \quad (2).$$

A formula for calculating a degree of combined leverage (DCL):

$$\text{percentage change in net profit} / \text{percentage change in net turnover} \quad (3).$$

The authors designed and classified the principles of and criteria for assessment of degrees of financial leverage – the degree of operating leverage (DOL), the degree of financial leverage (DFL) and the degree of combined leverage (DCL) (Table 1).

Table 1

**Principles of assessment of degrees of financial leverage, depending on different (positive and negative) indicator values to be used in the calculation (profit and loss account indicators used in the calculation are as follows: net turnover, net profit of the reporting period and percentage change in EBIT)**

<b>Degrees of operating, financial and combined leverage</b>			
<b>Positive leverage degrees</b>		<b>Negative leverage degrees</b>	
1	2	3	4
Percentage changes in both the numerator and the denominator of an indicator are positive	Percentage changes in both the numerator and the denominator of an indicator are negative	Percentage change is positive in the numerator and negative in the denominator	Percentage change is negative in the numerator and positive in the denominator
Positive (+) if a leverage degree > 1	Negative (-) if a leverage degree >1	Positive (+)	Negative (-)
Negative (-) if a leverage degree < 1	Positive (+) if a leverage degree < 1		

*Source: authors' compilation, 2020*

To explain the information available in Table 1, six various situations and six various practical examples are given below.

**Situation 1.** In calculating a leverage effect, a positive leverage degree occurs if the percentage changes in both the numerator and the denominator of an indicator are positive or if a leverage degree is above 1.

If using positive numbers in calculating leverage degrees, i.e. only positive percentage changes (in both the numerator and the denominator, i.e. profit and loss account indicators and EBIT are positive), the leverage degrees should be viewed as follows: the higher the leverage degree, the better. In fact, a positive result, i.e. a leverage degree of above 1 (one), yielded by positive numbers used to calculate leverage degrees should be viewed positively, as it indicates a high financial performance of the enterprise.

Practical example 1. The information and calculation results regarding the example are presented in Tables 2 and 3.

Table 2

**Changes in the financial performance of enterprise X: practical example 1**

Financial performance indicator	2018 (EUR)	2019 (EUR)	Absolute change (+; -) (EUR)	Relative change (2019/2018), (%)
1	2	3	4= 3 - 2	5= 4 x 100/ 2
Net turnover	10 000	14 000	+ 4 000	+ 40 %
<b>EBIT</b> (profit before interest and taxes)	1 900	3 900	+ 2 000	+ 105.26%
Net profit	1 400	3 110	+ 1 710	+ 122.14 %

Source: authors' calculations, 2020

Table 3

**Degrees of operating, financial and combined leverage for enterprise X: practical example 1**

Leverage degrees	Calculation result
1	2
Degree of operating leverage	105.26%/ 40% = 2.63
Degree of financial leverage	122.14 %/ 105.26% = 1.16
Degree of combined leverage	122.14 %/ 40% = 3.05

Source: authors' calculations, 2020

As shown in Table 3, positive percentage changes used in calculating leverage degrees yield a result of above 1, and the higher the leverage degree is obtained, the higher the financial performance of the enterprise is. The example shows that at a lower increase in net turnover (40 %), the enterprise has a higher increase in EBIT (105.26 %) and a much higher increase in net profit (122.14 %).

**Situation 2.** In calculating a leverage effect, a positive leverage degree occurs if the percentage changes in both the numerator and the denominator of an indicator are positive or if a leverage degree is below 1.

Practical example 2. The information and calculation results regarding the example are presented in Tables 4 and 5.

Table 4

**Changes in the financial performance of enterprise X: practical example 2**

Financial performance indicator	2018 (EUR)	2019 (EUR)	Absolute change (+; -) (EUR)	Relative change (2019/2018), (%)
1	2	3	4= 3 - 2	5= 4 x 100/ 2
Net turnover	<b>10 000</b>	<b>14 000</b>	+ 4 000	<b>+ 40 %</b>
<b>EBIT</b> (profit before interest and taxes)	<b>2 900</b>	<b>3 900</b>	+ 1 000	<b>+ 34.48%</b>
Net profit	<b>2 110</b>	<b>2 400</b>	+ 290	<b>+ 13.74 %</b>

Source: authors' calculations, 2020

Table 5

**Degrees of operating, financial and combined leverage for enterprise X: practical example 2**

Leverage degrees	Calculation result
1	2
Degree of operating leverage	34.48%/ 40% = 0.86
Degree of financial leverage	13.74%/ 34,48% = 0.40
Degree of combined leverage	13.74%/ 40% = 0.34

Source: authors' calculations, 2020

As shown in Table 5, positive percentage changes used in calculating leverage degrees and the leverage degrees below 1 allow concluding that the financial performance of the enterprise

decreases, irrespective of the fact that the financial performance of the enterprise is still positive (profit is made). In this situation, an increase in net turnover does not generate the same increase in EBIT and net profit for the enterprise (because a higher increase in net turnover results in a lower increase in EBIT and net profit). Overall, if the degrees of financial leverage for the enterprise are below 1 in a long term, this could gradually lead to a decrease in its profit margin. The example shows that at a lower increase in net turnover (40 %), the enterprise has a lower increase in EBIT (34.48 %) and a much lower increase in net profit (13.74 %).

**Situation 3. In calculating a leverage effect, a positive leverage degree occurs if the percentage changes in both the numerator and the denominator of an indicator are negative or if a leverage degree is above 1.**

Practical example 3. The information and calculation results regarding the example are presented in Tables 6 and 7.

Table 6

**Changes in the financial performance of enterprise X: practical example 3**

Financial performance indicator	2018 (EUR)	2019 (EUR)	Absolute change (+; -) (EUR)	Relative change (2019/2018), (%)
1	2	3	4 = 3 - 2	5 = 4 x 100 / 2
Net turnover	10 000	9 000	- 1 000	- 10 %
<b>EBIT</b> (profit before interest and taxes)	2 900	1 900	- 1 000	- 34.48%
Net profit	2 110	1 110	- 1 000	- 47.39 %

Source: authors' calculations, 2020

Table 7

**Degrees of operating, financial and combined leverage for enterprise X: practical example 3**

Leverage degrees	Calculation result
1	2
Degree of operating leverage	-34.48% / -10% = 3.45
Degree of financial leverage	-47.39 % / -34.48% = 1.37
Degree of combined leverage	-47.39 % / -10% = 4.74

Source: authors' calculations, 2020

As shown in Table 7, negative percentage changes used in calculating leverage degrees yield positive leverage degrees, i.e. above 1. In this example, the net profit, EBIT as well as net turnover of the enterprise decrease irrespective of the fact that the leverage degrees are above 1. How to explain it? The example allows concluding that not only the output but also the financial performance of the enterprise decrease because at a 10 % decrease in net turnover, EBIT decreases by 34.48 % and net profit by 47.39 %. This situation has to be viewed negatively.

**Situation 4. In calculating a leverage effect, a positive leverage degree occurs if the percentage changes in both the numerator and the denominator of an indicator are negative or if a leverage degree is below 1.**

Practical example 4. The information and calculation results regarding the example are presented in Tables 8 and 9.

Table 8

**Changes in the financial performance of enterprise X: practical example 4**

Financial performance indicator	2018 (EUR)	2019 (EUR)	Absolute change (+; -) (EUR)	Relative change (2019/2018), (%)
1	2	3	4= 3 - 2	5= 4 x 100/ 2
Net turnover	10 000	9 000	- 1 000	- 10 %
<b>EBIT</b> (profit before interest and taxes)	2 900	2 700	- 200	- 6.90 %
Net profit	2 110	2 000	- 110	- 5.21 %

Source: authors' calculations, 2020

Table 9

**Degrees of operating, financial and combined leverage for enterprise X: practical example 4**

Leverage degrees	Calculation result
1	2
Degree of operating leverage	- 6.90%/ -10% = 0.69
Degree of financial leverage	-5.21 %/ -6,90% = 0.75
Degree of combined leverage	-5.21 %/ -10% = 0.52

Source: authors' calculations, 2020

As shown in Table 9, negative percentage changes are used in calculating leverage degrees, as the net profit, EBIT as well as net turnover of the enterprise decrease and the leverage degrees are below 1. What is an assessment of this situation? The example shows that at a 10 % decrease in net turnover, EBIT decreases to a lesser extent, i.e. by 6.9 % and net profit decreases by 5.21 %. Sometimes, the enterprise decreases its output (resulting in a decrease in turnover), yet the EBIT and net profit decreases to a lesser extent, which could not be viewed negatively overall.

**Situation 5.** In calculating a leverage effect, a negative leverage degree occurs if the percentage change in the numerator is positive, whereas the change in the denominator is negative.

Practical example 5. The information and calculation results regarding the example are presented in Tables 10 and 11.

Table 10

**Changes in the financial performance of enterprise X: practical example 5**

Financial performance indicator	2018 (EUR)	2019 (EUR)	Absolute change (+; -) (EUR)	Relative change (2019/2018), (%)
1	2	3	4= 3 - 2	5= 4 x 100/ 2
Net turnover	10 000	9 000	- 1 000	- 10 %
<b>EBIT</b> (profit before interest and taxes)	---	---	---	---
Net profit	2 110	2 200	+ 90	+ 4.27 %

Source: authors' calculations, 2020

Table 11

**Degrees of operating, financial and combined leverage for enterprise X: practical example 5**

Leverage degrees	Calculation result
1	2
Degree of operating leverage	----
Degree of financial leverage	----
Degree of combined leverage	+ 4.27%/ -10% = - 0.43

Source: authors' calculations, 2020

As shown in Table 12, the example represents a calculation result for a degree of combined leverage; the calculation used one negative indicator (decrease in net turnover) and one positive indicator (increase in net profit). The situation could not unambiguously be viewed positively, as it shows the financial performance of the enterprise is good irrespective of the fact that the leverage degree is a negative number. The example allows concluding that at a 10 % decrease in net turnover, the net profit of the enterprise increases by 4.27 %. The example indicates that a decrease in the main economic activity of the enterprise (decrease in net turnover) leads to an increase in the net profit.

**Situation 6. In calculating a leverage effect, a negative leverage degree occurs if the percentage change in the numerator is negative, whereas the change in the denominator is positive.**

Practical example 6. The information and calculation results regarding the example are presented in Tables 12 and 13.

Table 12

**Changes in the financial performance of enterprise X: practical example 6**

Financial performance indicator	2018 (EUR)	2019 (EUR)	Absolute change (+; -) (EUR)	Relative change (2019/2018), (%)
1	2	3	4= 3 - 2	5= 4 x 100/ 2
Net turnover	10 000	14 000	+ 4 000	+ 40 %
EBIT (profit before interest and taxes)	---	---	---	---
Net profit	2 110	2 000	- 110	- 5.21 %

Source: authors' calculations, 2020

Table 13

**Degrees of operating, financial and combined leverage for enterprise X: practical example 6**

Leverage degrees	Calculation result
1	2
Degree of operating leverage	----
Degree of financial leverage	----
Degree of combined leverage	- 5.21 %/ + 40% = - 0.13

Source: authors' calculations, 2020

In Table 13, the calculation of a degree of combined leverage used a negative indicator value (percentage change in net profit) and a positive indicator value (percentage change in net turnover). The situation could unambiguously be viewed negatively, as the financial performance of the enterprise is poor – an increase in net turnover by 40 % results in a 5.21 % decrease in net profit. The example shows that an increase in the main economic activity of the enterprise (increase in turnover) leads to a decrease in the net profit.

**Conclusions**

1) By meaningfully applying the degrees of financial leverage, it is possible to enhance the financial performance of enterprises, particularly those engaged in seasonal business, which is typical of rural enterprises. Enterprise output and turnover could fluctuate owing to seasonality. Regardless of fluctuations in turnover, financial leverage degrees allow measuring and assessing the financial performance of an enterprise for making business decisions.

- 2) The authors of the paper believe that it is important to take into account percentage changes in the indicators used in the calculation of financial leverage degrees, as it is important whether the percentage changes are positive or negative.
- 3) Positive leverage degrees should be assessed based on percentage changes (positive or negative) in the indicators used in the calculation of financial leverage degrees.
- 4) The effects of financial leverage degrees on the financial performance of an enterprise at positive degree values – the percentage changes in both the numerator and the denominator of any indicator used in the calculation are positive – should be viewed as follows: the financial leverage degrees and their effects on the financial performance of an enterprise should be viewed positively (+) if a leverage degree is  $> 1$  and negatively (-) if a leverage degree is  $< 1$ .
- 5) In contrast, at negative degree values, the effects of financial leverage degrees on the financial performance of an enterprise should be viewed depending on what percentage changes in the numerator and the denominator of any indicator – positive or negative – are used in the calculation. If a percentage change is positive in the numerator and negative in the denominator, the effects of financial leverage degrees on the financial performance of an enterprise should be viewed positively (+). If a percentage change is negative in the numerator and positive in the denominator, the effects of financial leverage degrees on the financial performance of an enterprise should be viewed negatively (-).

## References

1. Amaro de M., J. (2001). *Theoretical Foundations of Corporate Finance*. Princeton University Press. ISBN 0-691-09794-6.
2. Berk, J., DeMarzo P. (2014). *Corporate Finance. The Core*, Pearson Education Limited. ISBN-13:978-0-273-79216-1.
3. Brealey, R., A., Myers S., C., Allen, F. (2014). *Principle of Corporate Finance*. McGraw-Hill Education. ISBN: 139780077151560.
4. Brealey, R., A., Myers, S., C., Allen, F. (2016). *ISE Principles of Corporate Finance*. McGraw-Hill Education.
5. Corelly, A. (2016). *Analytical Corporate Finance*. Springer International Publishing Switzerland. ISSN: 2192-4333. ISBN: 978-3-319-39548-7 ISBN (eBook): 978-3-319-39549-4. pp.208.-212.
6. Darrat A., F., Mukherjee, T., K. (1995). *Inter-industry Differences and the Impact of Operating and Financial Leverages on Equity Risk*. Review of Financial Economics. Volume 4, Issue 2, Spring 1995, pp.141-155.
7. Emery, D., R., Finnerty, J., D. (1997). *Corporate Financial Management*. Prentice-Hall, Inc. ISBN 0-13-433533-3.
8. Gaddefors, J., Korsgaard, S., Bruun, I., M. (2020). *Regional Development through Entrepreneurial Exaptation: Epistemological Displacement, Affordances, and Collective Agency in Rural Regions*. Journal of Rural Studies. Volume 74, February 2020, pp.244-256.
9. Hart, O. (1995). *Firms, Contracts, and Financial Structure*. Oxford University Press. ISBN 0-19-828850-6, pp. 126-155.
10. Jean, T. (2006). *The Theory of Corporate Finance*. Princeton University Press. ISBN – 13: 978-0-691-12556-2.
11. Jones, C., P. (1992). *Introduction to Financial Management*. Irwin, Boston, ISBN 0-256-07311-2, pp. 449-481.
12. Kedzo M., G., Zrinka, L. (2020). *The Financial Efficiency of Small Food and Drink Producers across Selected European Union Countries Using Data Envelopment Analysis*. European Journal of Operational Research, Published by Elsevier B.V., 2020.
13. Leibus, I. (2019). *Tax incentives for micro enterprises – Latvia's experience*. Proceedings of the International scientific conference "Economic science for rural development", Jelgava, 2019. Latvia University of Life Sciences and Technologies. Faculty of Economics and Social Development. No 52 : New Dimensions in the Development of Society. Home Economics. Finance and Taxes. Bioeconomy, p. 287-295. - ISBN 9789984483221 - ISSN 2255-9930
14. Li, Z., Li, Q., Zeng, Y. (2020). *Contraction Flexibility, Operating Leverage, and Financial Leverage*. Journal of Management Science and Engineering, Available online 18 February 2020, ScienceDirect, 2020.
15. Moles, P., Parrino, R., Kidwell, D. (2011). *Corporate Finance*. John Wiley & Sons Ltd. ISBN 978-0-470-68370-5.
16. Moyer, C., R., Mcguigan J., R., Kretlow, W., J. (1998). *Contemporary Financial Management*. International Thomson Publishing. ISBN – 0-538-87776-6., pp. 459-482.

17. Perez-Gomez, P., Arbelo-Perez, M., Arbelo, A. (2018). *Profit Efficiency and its Determinants in Small and Medium-sized Enterprises in Spain*. BRQ Business Research Quarterly Volume 21, Issue 4, October–December 2018. ScienceDirect, 2018, pp. 238-250.
18. Stelk, S., Park, S.-H, Medcalfe, S., Dugan, M., T. (2017). *An Additional Analysis of Estimation Techniques for the Degree of Financial Leverage*. ScienceDirect, 2017.
19. Sarkar, S. (2018). *Optimal DOL (degree of operating leverage) with Investment and Production Flexibility*. ScienceDirect, 2018. International Journal of Production Economics, 2018.
20. The National Development Plan 2021-2027.
21. Yang, R., Xia, K., Wen, H. (2016). *Venture Capital, Financial Leverage and Enterprise*. Procedia Computer Science 91, 2016, ScienceDirect, 2016, pp.114.–121.

## INVOLVEMENT OF OLDER PEOPLE IN EMPLOYMENT IN LATVIA

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**Abstract.** Demographic transformation and increase of older people in Europe have encouraged discussions regarding how economics could help older people to grow old in a dignified way and be active in labour market. In Latvia the term *older people* is usually applied to pensioners. In this research the author analysed the number of pensioners in Latvia from 2012 till 2018, as well as change of pensioners' employment level in population aged 45 and over. This research showed that 63.1 % of pensioners (45 years old and over) in Latvia were employed in 2018. Compared to 2012 the amount of employed pensioners in 2018 has increased by 10.2 %. Regression analysis between employed pensioners and average pension in Latvia from 2004 till 2018 shows a statistically significant linear interrelationship ( $R^2 = 0,723$ ) but the data correlation analysis shows a strong positive correlation ( $r = 0,850$ ).

**Key words:** older people, pensioners, employment, amount of pensions, Latvia.

**JEL code:** J14 , J26, I32, I38

### Introduction

The demographic transformations in states around the world, such as increasing number and proportion of older people, indicate a new situation in economics – global ageing and the longevity revolution (Bank of America, 2014). These two notions give objective evidence that all the aspects of society and economics must be based on a new point of view, which is founded on the research of older people needs, employment and quantitative changes in this group.

The importance and urgency are confirmed by the *Political Declaration and Madrid International Plan of Action on Ageing* (United Nations, 2002), which stresses that governments should in particular think about the standard of living, quality of life and the ability of being active in regards to older people. This plan marks a transition in the 21st century to a society, which would be open for people of all ages, including society, which creates an enabling and supporting environment for older people too.

The urgency of this problem in Latvia is highlighted by the fact that the involvement of older people in employment is also on the political agenda – this is one of the means how to decrease the dependency ratio, which is felt by the society in Latvia (Central Statistical Bureau of Latvia, 2020b; 2020h; 2020a), as well as its negative impact on the economic growth and also address aspects of social security (The Saeima of the Republic of Latvia, 2010).

### Research results and discussion

**Research aim:** to analyse the economic aspects of involvement of older people in employment in Latvia. **Research tasks:** 1) to research the theoretical thoughts regarding the problematics of older people group's definition; 2) to analyse the employment aspects of older people in Latvia in context with average pension. **Research methods:** the research employed qualitative methods for theoretical literature review, while numerical data were processed using statistical analysis, regression analysis and correlation analysis. **Research sources and materials:** information from the Central Statistical Bureau, documents, statistics and researches from Latvia and international organizations were used.

**Research limitations.** In this research term *older people* is applied to pensioners, who in 2004-2018 constituted four subgroups in Latvia – old-age pensioners, disability pensioners, service

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pensioners, pensions under special regulations. Number of pensioners in Latvia is determined as the total sum of pensioners in these subgroups. Taking into account that in 2004-2016 old-age pensioners in Latvia were people aged 45 and over (in 2016 there were 0.1 K old-age pensioners in the age group of 45-54), employment level of pensioners (%) was calculated for population aged 45 and over.

### **Theoretical background**

The term *older people* is ambiguous (Roebuck, 1979) and is frequently linked with the old-age pensioner's requirement – minimal age, which gives the right to receive this social security (World Health Organization, 2002). Usually in European countries this term is applied to people aged 65 and over but there is also another gradation.

Use of chronological age as a marker for the timing of old-age is not equivalent to biological age; however, in the same time it is universally recognized that these two criteria are not necessarily synonyms. United Nations analyses trends in population ageing by looking at the changes in population aged 60 and over (United Nations, 2015). Nevertheless, there may be other factors, not only chronological age (as it is in the majority of countries around the world) that could be the basis for the research of socio-economic and health aspects (Kowal, 2001). At the end of the 19th century so called *Friendly Societies* were starting to form in Great Britain (Parliament of the United Kingdom, 1875). The members of these organizations paid in small amounts of money over a long period of time in order to later share between themselves resources and provide economic independence and social security in case of illness and old-age (Shepherds Friendly, 2020). These *Friendly Societies* defined old age as any age after 50; however, mostly they used age of 60 or 65 as the benchmark for these pension schemes (Roebuck, 1979).

This shows that the term *older people* is multidimensional – it can be looked at as a chronological age, age related with fulfilling the requirements for old-age pension, psychological age or person's ability to be functionally active in society or other criteria. Term *pension age* is complex and includes several of these criteria; nonetheless people over the age of 50 have many characteristic features, which allow characterizing them as older people (World Health Organization, 2002). One of these features is the gradual losing of active role in labour market.

United Nations have concluded that involvement of older people in employment is not only the objective reality but also a vital necessity – societies around the world, including Latvian, are growing old. Therefore, different kinds of support should be provided for older people (age 50 and over), including creation of enabling environment for their employment (AAL Market Observatory, 2018). Global ageing is a new and dynamic process – it is anticipated that in year 2050 the population aged 60 and over will have increased by 1.1 B in comparison with year 2013, as well as altogether there will be 2B of older people around the globe (Bank of America, 2014).

The increase of older people has encouraged discussions regarding the role of economics in helping older people to grow old in a dignified way and be active in labour market. The Active and Assisted Living (AAL) approach is aimed to improve social care system and quality of life for older people (AAL Market Observatory, 2018). This approach is being implemented in Europe as of 2008.

In 2030, the number of population aged 60 and over in Latvia will have increased by 2.4 % in comparison with year 2015, in Estonia – by 3.0 %, in Lithuania – by 4.7 % (United Nations, 2015). This shows that Baltic region will have similar challenges in the future – providing and improving the quality of life for older people. This task is especially important for Latvia, as the average pension in

Latvia is lower than the poverty threshold – in 2017 the average paid out pension was 297.6 euro (Central Statistical Bureau of Latvia, 2020f), but the poverty threshold for a single person household was 367 euro. The at-risk-of-poverty rate for a single person (aged 65 and over) household reached 74% in 2017; for two adults without any dependent children the rate was 24.9 % (Central Statistical Bureau of Latvia, 2019).

Low pensions and insufficient income from other sources (kitchen garden, dividends etc.) are factors which could encourage older people to continue working after retirement or get employed at a later time. For the national economy of Latvia, it would be important to increase the employment level of older people, since the available workforce cannot cover the demand of labour market in the last few years. The urgency of this problem is also backed by the increase of vacancies in Latvia (Central Statistical Bureau of Latvia, 2020c). Therefore, it is important to research factors, which could influence the involvement of older people in employment and help with filling these vacancies.

### Research results and discussion

Author analysed changes in the number of pensioners in Latvia in this research, as well as determined the number of employed pensioners in 2004-2018. It can be derived from this research that in 2018 45.4 % of the total population aged 45 and over were working pensioners and this proportion has grown by 15.0 percentage points in comparison to 2012 (Table 1). Changes in the number of pensioners in age subgroups were uneven – in 2018 compared to 2012 the number of pensioners aged 45-54 decreased by 12.1 %, in age group 55-64 the decrease was even bigger – 26.5 %, but for age group 65 and over there was an increase of 3.9 %. The decrease of pensioners aged 45-54 and 55-64 in 2018 compared to 2012 could be explained with the gradual increase of state pension age – at the beginning of 2014 the state pension age in Latvia was 62 years and three months; at the beginning of 2020 it is already 63 years and nine months and in 2025 it will be 65 (Saeima of the Republic of Latvia, 1995; State Social Insurance Agency, 2018).

Table 1

**Number and employment level of pensioners aged 45 and over**

No	Indicator	2012	2013	2014	2015	2016	2017	2018	Change, 2018/2012, %
1.	<b>Pensioners* aged 45 and over, in K</b>	549.2	544.3	541.1	537.2	533	529.7	526.1	-4.2
<b>Including</b>									
1.1.	<b>Pensioners aged 45-54, in K</b>	30.7	30.4	29.8	29.2	28.5	27.6	27.0	-12.1
1.2.	<b>Pensioners aged 55-64, K</b>	131.1	123.8	116.2	110.5	104.4	100	96.4	-26.5
1.3.	<b>Pensioners aged 65 and over, in K</b>	387.4	390.1	395.1	397.5	400.1	402.1	402.7	3.9
2.	<b>Employed pensioners, in K</b>	301.1	308.2	310.8	317.6	326.0	329.6	331.8	10.2
3.	<b>Employment level of pensioners aged 45 and over, in %</b>	39.5	40.7	41.4	42.6	44.1	44.9	45.4	pp.

Source: author's calculations based on Central Statistical Bureau of Latvia, 2020d, 2020e, 2020i, 2020g

In 2018, there were 331.8 K employed pensioners (63.1 % of all pensioners) (Table 1). In comparison with 2012, the number of employed pensioners in 2018 increased by 10.2 % and its proportion in population aged 45 and over was 45.4 %. It can be deduced that the employment level of pensioners aged 45 and over has gradually increased in 2012-2018, which means that there are objective factors encouraging labour supply for pensioners.

The involvement of pensioners in employment can be influenced by several factors, including the amount of pension; therefore, the author decided to research this aspect in particular. By analysing the average pensions in Latvia, it can be concluded that in 2018 the average pension has increased by 71.9 euro (27.9 %) in comparison with the average pension in 2012 (Central Statistical Bureau of Latvia, 2020h; Table 2).

Table 2

**Average pensions in Latvia in 2012-2018**

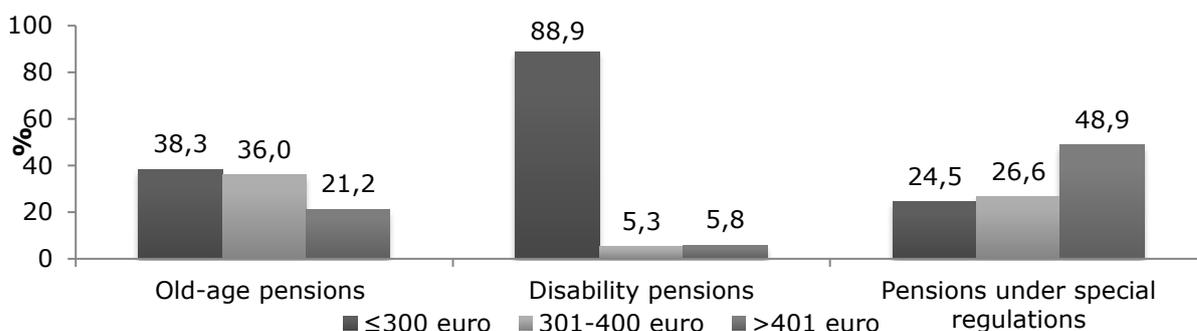
No	Indicator	2012	2013	2014	2015	2016	2017	2018	Absolute change, euro	Change, 2018/2012, %
1.	Old-age pension	256.5	259.2	266.3	273.4	279.6	289.4	313.8	57.3	22.3
2.	Disability pension	166.4	163.3	164.4	164.4	163.5	164.1	168.8	2.4	1.4
3.	Service pension	287.5	295.0	303.8	314.4	328.7	346.9	383.3	95.8	33.3
4.	Average pension*	257.9	264.2	271	276.8	283.5	297.6	329.8	71.9	27.9

*Designations: Average pension\*, including pensions under special regulations*

*Source: author's calculations based on Central Statistical Bureau of Latvia, 2020h*

The most significant change in the amount of pension can be seen in service pension group – the increase is 95.8 euro (33.3 %); whereas disability pension has seen practically no increase – on average it has increased by 2.4 euro (1.4 %) in 2018 (compared to 2012). The average old-age pension in 2018 was 329.8 euro, which means that compared to 2012 it has increased by 71.9 euro (27.9 %).

The analysis of proportion of pensioners according to the amount of pension showed that 194.2 k (38.3 %) from all old-age pension's recipients received a pension lower than 300 euro per month in 2018 (Fig. 1). Furthermore, 10.7 % of the old-age pension's recipients received less than 100 euro per month; the biggest proportion of old-age pension's recipients – 53.8 % – received 250-300 euro per month (Central Statistical Bureau of Latvia, 2020h).



*Source: author's calculations based on Central Statistical Bureau of Latvia, 2020j.*

**Fig. 1. Breakdown of pension recipients in Latvia based on the average pension in pension subgroups in 2018, in %**

74.3 % of old-age pensions', 94.2 % of disability pensions' and 51.1 % of pensions' under special regulation recipients received less than 400 euro per month in 2018 (Fig. 1.). Therefore, one can deduce that many single pensioner households were below the poverty threshold, as in 2018 it was set to 409.3 euro for a single person household (CSB, 2020f). This is especially relevant for the recipients of minimum old-age pension, and the Constitutional Court of Latvia has recognized it as a social problem (Paparde, 2020; Gruntmane, 2019).

In labour market, there is a correlation between a person's labour activity or job offer and the minimum income level for the providing of basic needs (Dudin, M., Lyasnikov, N., Klepova, T., Sukhova, E., Sizova, Y., 2018). Low pensions can be one of the factors that influence pensioners'

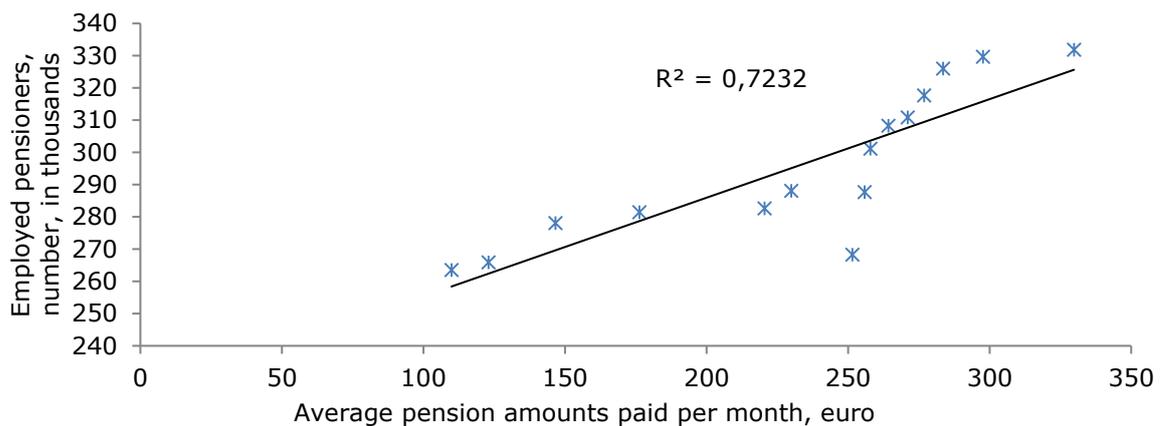
decision to be employed. Additionally, labour market has to be ready to supply work places for older people according to the aim of European countries to decrease poverty and social exclusion (European Commission, 2010).

This research shows that in Latvia there is a linear regression ( $R^2=0,723$ ) (Fig. 2) between the changes in the number of employed pensioners and average pension, and it can be described with this equation (1):

$$y = 0.306x + 224,794 \quad (1)$$

where:

y- number of employed pensioners, x – amount of pension in the specific period, R – determination coefficient.



Source: author's calculations based on Central Statistical Bureau of Latvia, 2020j

Fig. 2. Correlation between the number of employed pensioners and amount of pension in 2004-2018 in Latvia

The absolute value of model correlation ratio was 0.850 ( $r=0.850$ ;  $p=0.05; 13=0.000 < r$ ), which demonstrates that there is a strong positive correlation. Since the model (1) F value's ( $F=33,962$ ) p value is  $p=0.00$ , the model with the probability of 95 % is statistically significant. Based on this research, it can be concluded that the labour supply for pensioners is statistically influenced by the amount of pensions.

### Conclusions, proposals, recommendations

- 1) The definition of the age of older people differs between countries, and the term older people can be associated with chronological age, biological age, psychological age, ability to be active in society, set state pension age and other factors. In Europe, this term is usually applied to population aged over 65; however, the United Nations, when analysing problematics of older people, look at the population aged 60 and over. In Latvia, this term is usually applied to pensioners, who can be divided in subgroups based on the type of pension – old-age, disability and pensions under special regulations.
- 2) Statistical data for 2018 show that in Latvia 74.3 % of old-age pensions', 94.2 % of disability pensions' and 51.1% of pensions' under special regulation recipients received less than 400 euro per month and, as a result, single pensioner households were counted as poor.
- 3) The number of employed pensioners (aged 45 and over) is gradually increasing – the increase in 2018 (compared to 2012) was 10.2 %. Moreover, the employment level of pensioners aged 45 and over is increasing as well – the increase in 2018 (compared to 2012) was 15 percentage points.

- 4) Regression analysis of the statistical data from 2004–2018 showed that there is a linear correlation ( $R^2=0,723$ ) between the number of employed pensioners and the amount of pension. This proves that the amount of pension is a significant economic factor, which impacts the labour supply of older people in labour market. The impact of other factors on pensioners' decision to be employed, as well as the question, if the total income level of employed pensioners provides for their economic needs, should be analysed in the next studies.

## Bibliography

1. AAL Association (2019). *Ageing Well in the Digital World*. AAL Programme. Brussels, Belgium. Available: <http://www.aal-europe.eu/>
2. AAL Market Observatory (2018). *The EU Silver Economy: Market Size, Challenges and Opportunities*. June 12, 2018. Available: <https://www.activeadvice.eu/news/market-insights/the-eu-silver-economy-market-size-challenges-and-opportunities/>
3. Apollo.lv. (2019). *Uzņemumos un valsts iestādes ir vairāk nekā 30 000 vakantas darbavietas (There are More than 30 000 Vacancies in Companies and Public Institutions)*. Available: <https://www.apollo.lv/6779597/uznemumos-un-valsts-iestades-ir-vairak-neka-30-000-vakantas-darbavietas>
4. Bank of America (2014). *Silver Dollar – Longevity Revolution Primer*. Thematic Investing. Merrill Lynch. Available: <https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/merrill.pdf>
5. Central Statistical Bureau of Latvia. (2020a). IRG030. Average Age and Number of Population in Statistical Regions and Cities under State Jurisdiction by Age and Gender; at the Beginning of the Year. Available: [http://data1.csb.gov.lv/pxweb/lv/iedz/iedz\\_\\_iedzrakst/IRG030.px/](http://data1.csb.gov.lv/pxweb/lv/iedz/iedz__iedzrakst/IRG030.px/)
6. Central Statistical Bureau of Latvia. (2020b). IRG020. Demographic Burden in Statistical Regions, Cities under State Jurisdiction and Counties; at the Beginning of the Year). Available: [http://data.csb.gov.lv/pxweb/en/iedz/iedz\\_\\_iedzrakst/IRG020.px/](http://data.csb.gov.lv/pxweb/en/iedz/iedz__iedzrakst/IRG020.px/)
7. Central Statistical Bureau of Latvia. (2020c). Social Processes. JVSG040. Job Vacancies by Kind of Economic Activity on Average per Year. Retrieved: [http://data.csb.gov.lv/pxweb/en/sociala/sociala\\_\\_aiznemtdv\\_\\_ikgad/JVSG040.px/](http://data.csb.gov.lv/pxweb/en/sociala/sociala__aiznemtdv__ikgad/JVSG040.px/)
8. Central Statistical Bureau of Latvia. (2020d). NBG070. Employed by Age Group and Sex. Available: [https://data1.csb.gov.lv/pxweb/en/sociala/sociala\\_\\_nodarb\\_\\_nodarb\\_\\_ikgad/NBG070.px](https://data1.csb.gov.lv/pxweb/en/sociala/sociala__nodarb__nodarb__ikgad/NBG070.px)
9. Central Statistical Bureau of Latvia. (2020e). NBG330. Inactive Population by Status and Sex. Available: [https://data1.csb.gov.lv/pxweb/lv/sociala/sociala\\_\\_nodarb\\_\\_aktivitate\\_\\_ikgad/NBG330.px/](https://data1.csb.gov.lv/pxweb/lv/sociala/sociala__nodarb__aktivitate__ikgad/NBG330.px/)
10. Central Statistical Bureau of Latvia. (2020f). NIG020. At-Risk-of-Poverty Threshold (Illustrative Values). Available: [https://data1.csb.gov.lv/pxweb/en/sociala/sociala\\_\\_nabadz\\_nevienl\\_\\_monetara\\_nab/NIG020.px/table/tableViewLayout1/](https://data1.csb.gov.lv/pxweb/en/sociala/sociala__nabadz_nevienl__monetara_nab/NIG020.px/table/tableViewLayout1/)
11. Central Statistical Bureau of Latvia. (2019g). NBG021. Employment Rate by Ethnicity and Sex (%). Available: [https://data1.csb.gov.lv/pxweb/en/sociala/sociala\\_\\_nodarb\\_\\_nodarb\\_\\_ikgad/NBG021.px](https://data1.csb.gov.lv/pxweb/en/sociala/sociala__nodarb__nodarb__ikgad/NBG021.px)
12. Central Statistical Bureau of Latvia. (2020h). SDG030. Average Size of Pensions Paid (euro) Available: [http://data1.csb.gov.lv/pxweb/en/sociala/sociala\\_\\_socdr\\_\\_pensijas\\_\\_ikgad/SDG030.px/table/tableViewLayout1/](http://data1.csb.gov.lv/pxweb/en/sociala/sociala__socdr__pensijas__ikgad/SDG030.px/table/tableViewLayout1/)
13. Central Statistical Bureau of Latvia. (2019i). SDG020. Number of Pension Recipients by Age and Type of Pension at End of the Year (thsd Population). Available: [https://data1.csb.gov.lv/pxweb/en/sociala/sociala\\_\\_socdr\\_\\_pensijas\\_\\_ikgad/SDG020.px/](https://data1.csb.gov.lv/pxweb/en/sociala/sociala__socdr__pensijas__ikgad/SDG020.px/)
14. Central Statistical Bureau of Latvia. (2020j). SDG040. Number of Pension Recipients by Average Size of Pension Granted. Available: [https://data1.csb.gov.lv/pxweb/lv/sociala/sociala\\_\\_socdr\\_\\_pensijas\\_\\_ikgad/SDG040.px/table/tableViewLayout1/](https://data1.csb.gov.lv/pxweb/lv/sociala/sociala__socdr__pensijas__ikgad/SDG040.px/table/tableViewLayout1/)
15. Central Statistical Bureau of Latvia. (2019). *People at Risk of Poverty and Social Exclusion in Latvia in 2017, in Latvian*. Available: <https://www.csb.gov.lv/lv/statistika/statistikas-temas/socialie-procesi/nabadziba/meklet-tema/390-nabadzibas-risks-un-sociala-atstumtiba-latvija>
16. Dudin, M., Lyasnikov, N., Klepova, T., Sukhova, E., Sizova, Y. (2018). *Economic and Mathematical Modeling of the Labor Market in Education*. International Journal of Pure and Applied Mathematics. Volume 119 No. 17 2018, 1441-1445 ISSN: 1314-3395. Available: <https://acadpubl.eu/hub/2018-119-17/4/435.pdf>
17. European Commission (2010). *Europe 2020 A Strategy for Smart, Sustainable and Inclusive Growth*. Available: <https://op.europa.eu/en/publication-detail/-/publication/6a915e39-0aab-491c-8881-147ec91fe88a>
18. European Commission (2018). *The Silver Economy*. Oxford Economics, Technopolis. Directorate-General for Communications Networks, Content and Technology. Personal Author(s): Farla, K., Simmonds, P., Worthington, H., Varnai, P. ISBN. 978-92-79-76905-4. Available: <https://op.europa.eu/en/publication-detail/-/publication/2dca9276-3ec5-11e8-b5fe-01aa75ed71a1/language-en>
19. Gruntmane, T. (2019). *Iesprostotie pensionari (Trapped Pensioners)*. In: Ir. Available: <https://ir.lv/2019/10/14/iesprostotie-pensionari/>

20. Kowal, P. (2001). *Definition of an Older Person*. Proposed Working Definition of an Older Person in Africa for the MDS Project. Technical Report. January 2001 with 12,807 Available: [https://www.researchgate.net/publication/264534627\\_Definition\\_of\\_an\\_older\\_person\\_Proposed\\_working\\_definition\\_of\\_an\\_older\\_person\\_in\\_Africa\\_for\\_the\\_MDS\\_Project](https://www.researchgate.net/publication/264534627_Definition_of_an_older_person_Proposed_working_definition_of_an_older_person_in_Africa_for_the_MDS_Project)
21. LETA (2017). *Currently 60% Latvian Employers Face a Labour Shortage*. News Agency LETA, 11 December 2017. Retrieved: <http://nra.lv/latvija/231270-sobrid-ar-darbaspeka-trukumu-saskaras-jau-60-latvijas-uznemeju.htm>. Access: 21.01.2018.
22. Parliament of the United Kingdom (1875). *Friendly Societies Act*. Available: [https://en.wikipedia.org/wiki/Friendly\\_Societies\\_Act](https://en.wikipedia.org/wiki/Friendly_Societies_Act).
23. Pāpārde, I. (2020). *Vertes minimālas pensijas atbilstību Satversmei (Value of the Minimum Pension in Accordance with the Satversme)*. In: nra.lv.27.01.2020. Available: [https://nra.lv/latvija/303097-vertes-minimalas-pensijas-atbilstibu-satversmei.htm?utm\\_source=inboxlv&utm\\_campaign=inboxlvNews&utm\\_medium=button](https://nra.lv/latvija/303097-vertes-minimalas-pensijas-atbilstibu-satversmei.htm?utm_source=inboxlv&utm_campaign=inboxlvNews&utm_medium=button)
24. Roebuck, J. (1979). *When Does "Old Age Begin?": The Evolution of The English Definition*. *Journal of Social History*, Volume 12, Issue 3, Spring 1979, Pages 416–428. Available: <https://academic.oup.com/jsh/article-abstract/12/3/416/921395?redirectedFrom=fulltext>
25. Saeima of the Republic of Latvia (1995). *On State Pensions*. Available: <http://www.varam.gov.lv/lat/pol/ppd/?doc=13857https://likumi.lv/ta/id/38048-par-valsts-pensijam>
26. Saeima of the Republic of Latvia (2010). *Latvijas ilgtspējīgas attīstības stratēģija līdz 2030. gadam. Latvija 2030 (Sustainable Development Strategy of Latvia until 2030)*. Available: <http://www.varam.gov.lv/lat/pol/ppd/?doc=13857>
27. Shepherds Friendly (2020). *What is a Friendly Society?* Available: <https://www.shepherdsfriendly.co.uk/your-resource-centre/what-is-a-friendly-society>
28. State Social Insurance Agency (2018). *Three Levels of Pension System*. Available: <https://www.vsaa.gov.lv/pakalpojumi/pensionariemsenioriem/vecuma-pensija/pensijas-vecuma-paaugstinasana-no-62-lidz-65-gadu-vecumam/>
29. United Nations (2015). *World Population Ageing 2015*. Department of Economic and Social Affairs Population Division. New York, 2015. Available: [https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015\\_Report.pdf](https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf)
30. World Health Organization (WHO), (2002). *Proposed Working Definition of an Older Person in Africa for the MDS Project*. Health Statistics and Information Systems. Available: <https://www.who.int/healthinfo/survey/ageingdefnolder/en/>

## THEORETICAL ANALYSIS OF FACTORS AFFECTING THE DEVELOPMENT OF LOGISTICS CENTRE

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**Abstract.** Profitable logistics complex system is an important factor for stable growth in economics of the state. Efficient management is the key to success, especially in logistic sector. To achieve great success in logistics it is decisive to understand and analyse all factors which influence on development of current sector. The aim of the present study was to review scientific literature about the factors affecting development of logistics centre. Furthermore, the sustainability construction qualitative analysis method was employed as basis to conduct the research. Based on the literature, authors defined different factors influencing on the development of logistics centre and conducted groups of factors. Using qualitative analysis, the author developed main factors and elaborated definitions for each factor to provide information about included sub-factors. Service level was indicated as one of the important categories. It shows level of clients' satisfaction with service given by the logistic centres. Finally, all factors were ranged by importance, to show gradation and influence on development.

**Key words:** logistics; development; warehouse; transport infrastructures.

**JEL code:** O18

### Introduction

The interest to develop the logistic infrastructure worldwide has been growing very fast during the recent years, particularly due to more flexibility and availability of different transportation types.

Transport and telecommunication infrastructures play a key role for regional logistics development. A logistics chain manages the material flow of raw materials to final customers, covering many sectors such as transport, telecommunications, warehousing, customs, and developing logistics zones. Better logistics systems can attract direct foreign investment, which is widely regarded as an important economic growth engine (Carlucci *et al.*, 2018).

Transporting of goods and any production of raw materials in the logistic chain is not possible without the necessary concentration of the stock in a fastened location and storing goods in relevant warehouses. All logistic processes increase the total value of goods. Because of that, work of the warehouses has a significant impact on the transporting of materials, all vehicles and turnover costs.

According to Dablanc (2013), some warehousing activities which were previously performed as part of a manufacturing or distribution activity (and on the same premises), have been outsourced to logistics providers, automatically increasing the number of warehouses. In some cases, manufacturers have implemented a specific warehousing/logistics facility when previously logistics functions (which required less space) were performed within the manufacturing facility itself. On the other hand, Fechner (2017) holds the view that, that the accessibility and the quality of the transport infrastructure [transport network] was another important factor, taking into account by investors and as the consequence also by developers during choosing the warehouse localization due to the fact, that it is correlated with the speed and reliability of logistics service and its costs.

Different factors can affect development of logistic centres, thus the author needs to take into account opinions of different papers and compare them. One of the main obvious factor is location of the logistic centre, therefore other sub-factors should be evaluated.

The problem of logistics centre location is an example of a multi-dimensional problem. These dimensions include accessibility, quality of transportation and infrastructure, and multi-modal transportation availability, which all influence the decision. Non-spatial factors also need to be

considered, such as demographics, labour availability, and the volume of international trade in determining convenient areas for the new facilities (Onden, Acar & Eldemir, 2016).

In the authors opinion, logistics centres are needed in different places of the cities, not only at the place where production plants are located. For deeper analysis it is necessary to explore all possible factors, which affects and are common to development of logistics infrastructure. **Research object** is Logistics centres and **subject of research** is factors which affect development of logistic centre. The **main goal** of the article is to present the result of analysis related to the defined factors for possible development of logistic centres. The **research question** provides a focus for this study: Which factors affect the development of logistics centres? Authors defined **tasks** to fulfil this study: theoretical analysis of factors and setting one clear group of factors which affects development of logistics centre. Authors used summative content analysis for defining categories. This study can be used as a theoretical base for development of logistics centre. Authors used different scientific databases for literature research.

**The methods applied.** Within the research, the authors used a summative content analysis method for defining categories and sub-categories, after that one common list of factors where defined.

Content analysis is a widely used qualitative research technique. Rather than being a single method, current applications of content analysis show three distinct approaches: conventional, directed, or summative. The major differences among the approaches are coding schemes, origins of codes, and threats to trustworthiness. A summative content analysis involves counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context (Hsieh & Shannon, 2005).

Most important - to start searching for the right literature; therefore, were used different databases like Ebscohost, Web of Science, ResearcGate and Scopus. Most important searching words were: logistics centres, development, factors, warehouse.

Articles were chosen by conformity to research question and exploring field. After that these articles were re-checked and authors chose 31 papers, which were close to this research question.

In many articles these factors were mentioned more than once, so it was easy to understand authors' view on this question. In this case these factors were used more than once from one author. All citations got coding and were analysed during this research.

## **Research results and discussion**

After exploring the field, the authors decided to research more those factors which influence development of logistics centres. Therefore, research question was defined: Which factors affect the development of logistics centres?

Weng (2016) explains, that in the past, companies only considered quality, costs, flexibility, and time in the measurement of performance, and environmental factors were not part of the mix. But twice he noticed that green environmental warehousing strives to reduce environmental pollutions, cargo spoilage, and transportation costs.

Jardas, Dundovic & Badurina-Tomic (2016) states that city logistics can be defined as the process of optimizing the logistics and transport activities of individual companies in an urban area, respecting traffic, environmental and energy factors, and the respective organization of existing urban transport mechanisms in place. Shin & Shim (2013) explains that failures of data warehouse projects are not only due to technological problems, but also due to the lack of consideration on managerial and

environmental factors, such as characteristics of host organizations, top management support, and end users.

Gorecka & Maksymiuk (2015) insist, that for private entrepreneurs it is necessary to have ability to cooperate with the administration and local government units, ecological and environmental factors, legal and financial factors. In the case of the private sector, the most important aspects are the economic and technical conditions of a given location, which include: the value of the logistics market, investment attractiveness for potential clients, availability of a multi-branched logistics and communications infrastructure, availability and price of land.

Table 1

**Analysis of factors**

<b>Reference</b>	<b>Factors</b>
(Abdullayev et al., 2016)	transport network
(Alibone, 2011)	IT system
(Anastase, 2013)	relationships between countries
(Bisenieks & Ozols, 2010)	costs; service
(Braganca, 2008)	infrastructure; competitors
(Dablanc, 2013)	process changes; location
(del Rio Vilas, Longo & Monteil, 2013)	human factors
(Demyanova et al., 2017)	infrastructure
(Devangan, 2016)	planning; location; transport network
(Drelichowski & Sikora, 2017)	IT system
(Durmus & Turk, 2014)	costs; transport network (3); good workers
(Fechner, 2017)	transport network; service; costs
(Gorecka & Maksymiuk, 2015)	location; value of logistic market; investment; price of land; environmental; financial; legal
(Grossea et al., 2014)	human factors; errors
(Heitz, Launay & Beziat, 2019)	transport network; service
(Jardas, Dundovic & Badurina-Tomic, 2016)	transport network (2); costs; service; environment
(Jumaniyazov, 2010)	location; service
(Kabashkin, 2007)	transport network; government
(Karkh, 2016)	costs
(Kucheruk & Bozhok, 2016)	technologies; IT system
(Mitropoulos et al., 2016)	existing trends; employment growth
(Muha, Sever & Sokolovskij, 2018)	flow of goods; number of transport companies; tax system
(Onden, Acar & Eldemir, 2016)	accessibility; quality; infrastructure; transport network
(Onstein, 2015)	costs (2); service; product demand (2); lead-time; delivery frequency; product characteristics
(Onstein, van Damme & Tavasszy, 2019)	demand characteristics; service level (3); costs (3); product characteristics (2); trade-off; demand level; land availability; accessibility; government
(Shin & Shim, 2013)	management; environment; size of organization
(Tartavulea, Belu & Dieaconescu, 2011)	economic crisis
(Turguttopbas, 2016)	costs; centralization; infrastructure; technologies; social
(Voorhees, 1976)	transport network
(Wagh, 2019)	costs; service level
(Weng, 2016)	quality; costs; flexibility; time; environment (2)

**Source: created by the authors**

Costs' factors are described by such authors as Onstein, van Damme, Tavasszy, Wagh, Durmus, Turk, Turguttopbas, Fechner, Bisenieks, Ozols, Jardas, Dundovic, Badurina-Tomic, Karkh and Weng.

Wagh (2019) explains that the basic aim is to minimize the total cost of operation, and storage while providing the desired level of service.

Other authors emphasize the importance of the transport network factor. Kabashkin (2007) stated that one of these efforts is the development of logistics centres (LCs) and their networking, which will continue to have an impact on improving communication links, spatial planning practices and approaches, logistics chain development and the promotion of sustainable transport modes. Heitz, Launay & Beziat (2019) agree, that there is the importance of proximity to transport infrastructure, and more specifically to road infrastructure. Accessibility is a key factor in the location of logistics facilities.

Different point of view is expressed by authors who describe more human factors, tax system, social factors and economic crises. These authors are: Tartavulea, Belu, Dieaconescu, del Rio Vilas, Longo, Monteil, Grossea et al., Muha, Sever, Sokolovskij and Turguttopbas. Del Rio Vilas, Longo & Monteil (2013) states that the lack of consideration of the human factors in production systems has negative direct consequences on labour work conditions and plant productivity.

From thirty-one (31) literature resources, authors got forty three (43) different coding of factors, which influence development of logistics centres.

Table 2

**Frequencies of categories**

<b>Factors</b>	<b>Sub-factors from analysis</b>	<b>Frequencies</b>
Environment	Environment	5
Costs	Costs	12
Transport network	Transport network	12
Service level	Service level, Service, Quality	13
Organization infrastructure	Employment growth, Size of organization, Infrastructure, Management, Good workers, Number of transport companies	9
Political issues	Government, Relationships between countries, Social, Economic crisis, Legal	6
Human factors	Human factors	2
Financial aspects	Tax system, Value of logistic market, Financial, Investment, Price of land, Land availability	6
Technologies	IT system, Technologies, Process changes	7
Time factors	Trade-off, Flexibility, Time, Accessibility	5
Location	Centralization, Location	6
Processing goods	Demand characteristics, Delivery frequency, Errors, Lead time, Flow of goods, Planning	7
Market	Existing trends, Competitors, Product characteristics	5
Product demand	Product demand	2

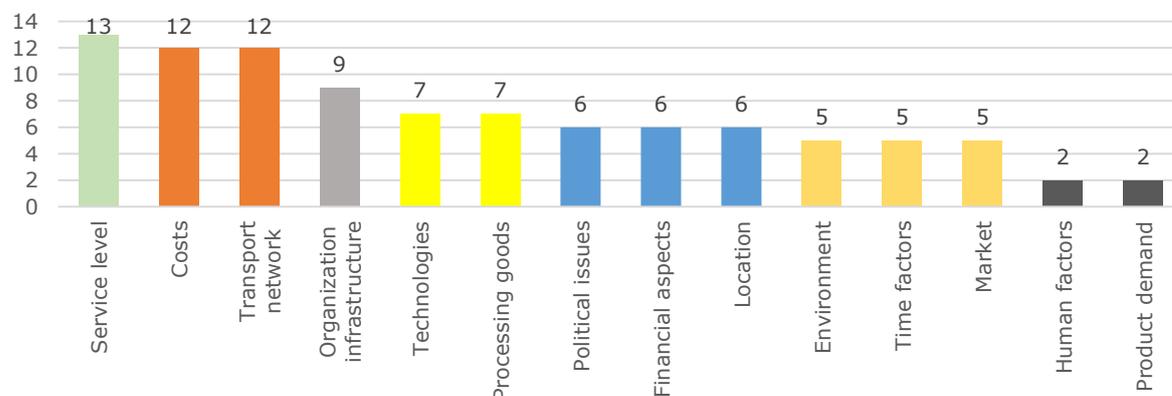
**Source: created by the authors**

Main factors are showed in Table 1, if one author used this factor more than once in his work, then it is written in the brackets how many times. It helped to illustrate the author's point of view. Gained factors were analysed and compared after that. This system allowed to elaborate group of main factors for development of logistic centre.

All factors were counted, thus initially the author defined the ones that were the most important and afterwards combined the other ones which were similar to each other.

After combining these factors, authors highlighted fourteen (14) categories. Table 2 gives overview about all sub-factors, which were included during this study in the current category.

The most important factor of development of logistic centres is service level, which shows how productive each warehouse is working. For better analysis it is possible to see diagram of this research in Figure 1. This graph shows equal level of categories importance in one colour and are arranged by importance.



Source: created by the authors

Fig. 1. Frequencies by importance

In literature recourses, as most important factors were mentioned – service level, costs and transport network, followed by organization infrastructure, technologies and processing of goods.

Table 3

#### Definitions of elaborated factors

Factor	Definition, sub-factors
Costs	Value of money which is spend on development of logistics centre and its facilities.
Environment	'Green logistics'; all factors related to environmental issues and aspects, decreasing air pollution and packaging recycling.
Financial aspects	All coding's related to money and payment, investments etc.
Human factors	Influence of people on different processes.
Location	Place were logistic centre is located, accessibility and availability.
Market	Market share of logistic.
Organization infrastructure	Structure of the company, involved divisions in development of logistic centre.
Political issues	Different governmental decisions, which can influence development of logistic centre.
Product demand	Influence on development depending on product market share.
Processing goods	Process of flow of goods in the company, inside processes.
Service level	Providing the desired level of service to clients / cooperation partners.
Technologies	IT and different innovations, which can be used in development of logistic processes.
Time factors	Definition of a time for any processes, which are related to development of logistic centres.
Transport network	Different transport noodles and accessibility from different types of transport.

Source: created by the authors

Author elaborated definition of all combined categories. It is illustrated in Table 3. Definitions give overview of all factors and define main ideas of each factor.

Not so important is any product related information or influence. Many large companies always think about transportation network, but not location. Nevertheless, cooperation partners always want to be near to biggest companies with whom they have largest goods' movement. Different groups

think on various factors – for one it is more important to have a transport network near factory / logistics centre, for others – locations are more important than transportation network.

Five parts of the text showed environment as very important category of development in logistic field. From that perspective it is more important because of society and eco-friendly thinking. Not so important were human factors and product demand; nevertheless, we can't ignore these factors. Many authors are thinking more about global issues, also these last five are also very important in development a logistic centre.

### **Conclusions, proposals, recommendations**

- 1) Scientific and practicable literature provides a broad range of factors and ideas. The aim of article is reached by exploring different literature resources and established group of factors which influence the development of logistics centres.
- 2) Elaborated definitions give a quick overview about included sub-factors and allow to understand point of view and influencing area.
- 3) Frequencies of factors can be evaluated differently and can be used for exploring next steps of logistic centre sustainability in different places.
- 4) The results of the analytical study show that many factors are influencing each other and always are related with significant investments. Factors can be divided also by their importance for special groups – clients, partner, possible strategical partners, renters etc.

### **Bibliography**

1. Abdullayev, S., Kiseleva, O., Adilova, N., Bakyt, G., & Vakhitova, L. (2016). Key Development Factors of the Transit and Transport Potential Of Kazakhstan. *TRANSPORT PROBLEMS 2016*. Volume 11 Issue 2. 17-26. DOI: 10.20858/tp.2016.11.2.2.
2. Alibone, M. (2011). Critical Factors that Determine Picking Speed and Accuracy. Retrieved June 13, 2019, from <https://www.logisticsmanager.com/page/3/?s=mike+alibon>.
3. Anastase, I. (2013). Factors Affecting the Productive Potential of the Enterprise. *SEA - Practical Application of Science*. Romanian Foundation for Business Intelligence, Editorial Department, issue 1, 7-15.
4. Bisenieks, J., & Ozols, E. (2010). The Problem of Warehouse Operation, its Improvement and Development in Company's Logistics System. *Human Resources: The Main Factor of Regional Development*. Issue 3, 206-213.
5. Braganca, P. (2008). Fourth-Party Logistics - A study on modern logistics. Unpublished bachelor thesis, Umea School of Business and Economics, Umea University, Umea, Sweden.
6. Carlucci, F., Cira, A., Massari, S., Ioppolo, G., & Siviero, L. (2018). Logistics and Land Use Planning: An Application of the ACIT Indicator in European Port Region. *Land Use Policy*. 75, 60-69. DOI: 10.1016/j.landusepol.2018.03.036.
7. Dablan, L. (2013). 'Logistics Sprawl:' the Growth and Decentralization of Warehouses in the L.A. Area. 5th International Urban Freight Conference, 8-10 October 2013, (pp. 49-69). Long Beach, United States.
8. Del Rio Vilas D., Monteil, N.R., & Longo, F. (2013). A General Framework for the Manufacturing Workstation Design Optimization: A Combined Ergonomic and Operational Approach. *SIMULATION*, 89(3), 306-329. DOI: 10.1177/0037549712462862.
9. Demyanova, O., Zaidullina, C., Pugacheva, M.A., & Girfanova, E.Yu. (2017). Innovative Infrastructure as the Factor Of Efficiency Increase Of Industrial Enterprises Activity. 4th International Multidisciplinary Scientific Conference on Social Sciences and Arts SGEM2017, 22-31 August 2017. (pp. 393-403), Albena, Bulgaria. DOI:10.5593/sgemsocial2017/13/S03.050.
10. Devangan, L. K. (2016). An Integrated Production, Inventory, Warehouse Location and Distribution Model. *Journal of Operations and Supply Chain Management*. Volume 9, Number 2, 17 - 27. DOI: 10.12660/joscmv9n2p17-27.
11. Drelichowski, L., & Sikora, M. (2017). Factors Influencing the Development Of Virtual Food Supply Chains In Polish International Trade. *Studies & Proceedings of Polish Association for Knowledge Management*. Issue 86, 5-12.
12. Durmus, A., & Turk S.S. (2014). Factors Influencing Location Selection of Warehouses at the Intra-Urban Level: Istanbul Case. *European Planning Studies*. Volume 22, No. 2, 268-292. DOI: 10.1080/09654313.2012.731038.
13. Fehner, I. (2017). Economic and Logistic Conditions of the Warehouse Market in Poland. *Scientific Journal of Logistics 'LogForum'*. Issue 1/2017, article 9, 103-113. DOI: 10.17270/J.LOG.2017.1.9.

14. Gorecka, A., & Maksymiuk, M. (2017). Determining Factors of Logistics Centres Development in Poland. Logistics infrastructure. Volume 33, 61-68.
15. Grossea E., Glocka C., Jaberb M., & Neumannb P. (2014). Incorporating Human Factors in Order Picking Planning Models: Framework and Research Opportunities. International Journal of Production Research. Vol. 53, No. 3, 695–717. DOI: 10.1080/00207543.2014.919424.
16. Heitz, A., Launay, P., & Beziat, A. (2019). Heterogeneity of Logistics Facilities: an Issue for a Better Understanding and Planning of the Location of Logistics Facilities. Eur. Transp. Res. Rev. 11, 5. DOI: 10.1186/s12544-018-0341-5.
17. Hsieh, H-F., & Shannon, S. (2005, November). Three Approaches to Qualitative Content Analysis. Qual Health Res. 15(9): 1277-88. DOI: 10.1177/1049732305276687.
18. Jardas, M., Dundovic, C., Badurina-Tomic, P. (2016). Supply Chain - a Key Factor of the Sustainable Development of City Centers. Scientific Journal of Maritime Research 30. 45-50.
19. Kabashkin I. (2007). Logistics Centres Development In Latvia. TRANSPORT – 2007. Vol XXII, No 4, 241–246. DOI:10.3846/16484142.2007.9638135
20. Jumaniyazov, N. (2010). Creating Multi-Modal Logistics Centers: Prospect for Development in Central Asia. Perspectives of Innovations, Economics & Business. Volume 6, Issue 3, 21-23. DOI: 10.15208/pieb.2010.70.
21. Kucheruk, G., & Bozhok, A. (2016). Factors of Logistics and Forwarding Service Formation and Development. Proceedings of the National Aviation University. 2016. N 2(67), 121-125. DOI: 10.18372/2306-1472.67.10441.
22. Mitropoulos, L., Adamos, G., Nathanail, E., Yatskiv, I., & Kabashkin, I. (2016). Building on European Scientific Excellence to Develop an Educational Program on Intermodal Connections for Latvia and the Region. Transport. 79-93. DOI:10.3846/16484142.2017.1280851.
23. Muha, R., Sever, D., & Sokolovckij, E. (2018). An Approach to the Location of a Warehouse Distribution Centre in the International Environment: a Slovenian Perspective. Scientific Journal Zeszyty Naukowe of the Maritime University of Szczecin. 79-85. DOI: 10.17402/304.
24. Onden, I., Avni Zafer, A., & Fahrettin, E. (2016). Evaluation of the Logistics Center Locations Using a Multi-Criteria Spatial Approach. Transport. 322-334. DOI: 10.3846/16484142.2016.1186113.
25. Onstein, S. (2015). Distribution Structure and Distribution Centre Location Decision-Making-a Review. Vervoerslogistiek Werkdagen, 26-27 November 2015. Breda, Netherlands.
26. Onstein A., Tavasszy L. & A. van Damme D., (2019). Factors Determining Distribution Structure Decisions in Logistics: a Literature Review and Research Agenda, Transport Reviews, 39:2, 243-260. ISSN: 0144-1647 (Print) 1464-5327 (Online) Journal homepage: <https://www.tandfonline.com/loi/ttrv20>
27. Shin, YB., & Shim, C. (2013). An Empirical Study of the Organizational Factors Affecting the Optimization of Data Warehousing Design Strategy. Franklin Business & Law Journal, 141-160. DOI: 10.1080/17509653.2015.1113394.
28. Tartavulea, R. I., Belu, M.G., & Dieaconescu, V. C. (2011). Spatial Modeling in Logistics Decision-Making Processes. Identifying the Optimal Location for a Single Central Warehouse. Annals of the University of Oradea, Economic Science Series. Vol. 20 Issue 1, 137-143.
29. Turguttopbas, N. (2016). Regional Development and Logistic Centers: A Turkish Experience. Perspectives of Innovations, Economics & Business (Pieb). Volume 16, Issue 2, 89-103. DOI: 10.15208/pieb.2016.07.
30. Voorhees, R. (June, 1976). Communications: A New Logistics Factor in Location Decisions and Patterns of Regional and National Development. Transportation Journal. Vol. 15, No. 4, 73-84. Retrieved June 11, 2019, from <http://www.jstor.org/stable/20712387>.
31. Wagh M. (2019). Design of warehouse. Global Journal of Engineering Science and Research Management. 2(5), 1011-1014.
32. Weng C.K. (2016). A Study from Client's Perspectives on Exploring Financial Factors of Green Logistics' Development. International Journal of Performance Measurement. 2016, Vol. 6, No.1, 1-16.
33. Karkh D., (2016). Тенденции развития складской недвижимости как фактора конкурентоспособности предприятий оптовой торговли (Trends in the development of warehouse real estate as a factor in the competitiveness of wholesalers). Upravlenec. Vol. 59, Issue 1, 81-84. (in Russian)

## ASSESSMENT OF RESULTS OF REORGANIZATION OF LAND RELATIONS IN BALTIC STATES

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**Abstract.** After the collapse of Soviet system, immediately after declaration of independence, Estonia, Latvia and Lithuania decided to initiate land reform within the framework of agrarian reform. The defined general objectives of land reform were: to establish a fairer system of property and use rights, to create conditions for intensity and productivity increasing of land use, to strengthen the rights of lessors and tenants, to grant land to those who wish to cultivate or otherwise use the land. However, the legislation and administrative systems of separate Baltic States were different, so the objectives and tasks of land reform, as well as the measures and methods for implementing the land reform, were different.

The aim of the article is to compare and evaluate the land ownership reform processes in Estonia, Latvia and Lithuania, to analyse their legal security, the objectives, tasks, process and procedures of the reform, as well as the results obtained. In order to find out the situation and to make comparative judgments and conclusions, in research mainly document analysis and monographic or descriptive method have been used.

The positive role of land reform in all Baltic States is the restoration of land ownership, which has led to more targeted and intensive use of land in agriculture and other sectors. Land reform has created the preconditions for initiative and action of landowners in market economy. An additional effect is the development and implementation of state-of-the-art real estate registration systems in administration of each state. The article also analyses the shortcomings and problems encountered during the reform.

**Key words:** Baltic States, Land Ownership, Land Reform, Land Use, Land Management.

**JEL code:** Q15; Q24.

### Introduction

At this moment, 30 years have passed since collapse of the Soviet Union. Change of political situation always is one of the main challenges for rearrangement of land ownership and land use forms within new socio-economic circumstances. Therefore, in all former soviet republics, as well as in former socialist countries in Eastern Europe, has started re-organisation of land relations - land reforms. Land reform is one of the means of legal changes of the structure of land ownership. General defined key objectives of land reform are:

- to establish fairer distribution of ownership and land use rights;
- to secure rights of leaseholders;
- to increase the intensity and productivity of land use;
- to give the land to persons who need it (Auzins A., 2008).

However, the objectives and tasks, as well as process of land reform can vary from country to country, depending on public administration system, existing structure of land ownership, social situation and other circumstances. Estonia, Latvia and Lithuania - neighbours at the Baltic Sea, at beginning of reform had similar land use situation due to similar geographical conditions and unified management system in frame of soviet system. As it can be seen in Table 1, there are no significant differences in total area and population between these three countries.

Lithuania has the largest proportion of agricultural land, while Estonia and Latvia have relatively larger area of forests.

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Rearrangement of the economy at the end of the 1980-s, understanding of certain shortcomings in the management of former large agricultural enterprises, an idea that private initiative could solve these problems, as well as principles of self-financing became more and more popular in society. It determined that, still being under soviet legislation, simultaneously in all three Baltic Republics there were accepted appropriate legislative acts on transfer of the land to individual management:

- in Estonia - the Farmers' Holdings Act (adopted on 06.12.1989) (Eesti NSV taluseadus, 1989);
- in Latvia – the law "On peasant farms in Latvian Soviet Socialist Republic" (adopted on 18.05.1989) (Par zemnieku saimniecibam ..., 1989);
- in Lithuania - the law "On Farmer's Farm" (adopted on 04.07.1989) (Aleknavicius, 2008).

Table 1

**Features characterising the territory, population and land use  
 in the Baltic States (on 01.01.2019)**

<b>Indicators</b>	<b>Estonia</b>	<b>Latvia</b>	<b>Lithuania</b>
Territory of country, million ha	4.52	6.46	6.53
Population, million people	1.33	1.91	2.79
Population density, inhabitants per square km	29.4	29.5	42.8
<b>Types of land use, %:</b>			
agriculture land	30	36	52
forests	53	48	33
swamps	7.8	3	2
under water	2.2	4	4
under buildings and yards	2.3	2	3
under roads	1.2	2	2

**Source: author's calculations based on data of national cadastre information system and national statistics of Estonia, Latvia and Lithuania**

These decisions led to the transition from centralised planned economy to the market economy, followed by the change of exclusive public ownership to land and other means of production to private ownership. By adopting these laws, the land remained in exclusive ownership of the State, but members of large collective farms were able to establish peasant farms - to receive the land in permanent use with the right to inherit it. Agricultural machinery and other means of production, as well as residential and production buildings could be owned by new subjects - farmers.

This meant that the law extended the range of objects that could be in private ownership. Establishment of such peasant farms conformed to the political, economic and social situation at this time, and this really created preconditions for further conversion of state ownership. The land to new formations was separated from large collective farms (kolkhozes and sovkhoses). Demand for land was high and number and area of established peasant farms increased very fast (Table 2).

These decisions played very important role, both positive and negative, in further processes of land reform. Strong willingness to create individual farms (households) played an important role in identifying of problems and solutions of following land reform. However, creating these individual farms interests of former landowners (until 1940) and boundaries of their households were not respected, because in this period in frame of soviet system the question of restitution of ownership rights to former owners was not even considered. This situation created one of the challenges in further processes of reorganisation of land relations.

Table 2

**Development of peasant farms in Estonia, Latvia and Lithuania (1990 - 1993)**

Indicators	Estonia		Latvia		Lithuania
	1991	1993	1990	1991	1992
Number of peasant farms, thousand	7.0	10.2	7	10	5.14
Total area of peasant farms, ha	176.7	252.2	152	186	86.4
Average area of peasant farm, ha	25.1	24.8	21.7	18.6	16.8

*Source: author's calculations based on (Aleknavicius P., 2008; Jurgenson, E., 2016; Zemes reformai Latvija..., 2000)*

Fundamental changes in ownership relations started after the restoration of independence in 1991, when land reform began in all three Baltic States. Implementation of land reform was preceded by adoption of first legislative acts, followed by many other laws and regulations.

The aim of the article is to evaluate the processes of restructuration of land ownership rights in Baltic States, to analyse their legal background, objectives and tasks of reform, progress of process and procedures, as well as its results and to make comparisons between them.

In order to clarify the situation and to carry out comparative judgments and conclusions, the study has applied a method of analysis of documents and a monographic or descriptive study. The study summarises the studies published previously by the authors of the article and other researchers on the progress and results of land reform in the relevant countries, as well as analyses legislative framework for land reform in all three countries.

**Research results and discussion**

**1. Objectives and tasks of reforms**

The conceptual task of land reforms was to rearrangement of land-based legal and economic relations. The aim was to transform legal, social and economic relationship between land ownership and land use both in rural and urban areas. Analysing the laws adopted at the beginning of land reform in each country and determined objectives and tasks, it can be concluded that in all three Baltic States specific rules were adopted to initiate land reform and to establish its main principles.

In Estonia, land reform was defined as part of the ownership reform. As the first Act can be mentioned "Principles of ownership reform in Republic of Estonia" adopted on 13 June 1991, which sets out the principles, objectives, content, of property reform, subject matter and modalities of ownership reform. This Act also forms the basis for other legislation necessary for property reform. It focuses on the return of illegally disposed real properties in 1940 (Eesti Vabariigi omandireformi..., 1991). That law was followed by the Land Reform Act adopted on 17 October 1991 (Table 3).

There was quite similar situation also in Lithuania. In 1991, two laws which provided for significant redeployments in the management of land resources in the Republic of Lithuania were adopted (Del pilieciau nuosavybvs..., 1991; Law on Land Reform, 1991). The first of these documents established general arrangement for return of ownership rights to former owners, and second law - general rules for land reform in cities and rural areas of Lithuania (Table 3).

In Latvia, unlike Estonia and Lithuania, at the beginning of reform, two parallel reforms were practically in place. Each of them was governed by separate laws. Decision of Supreme Council of the Republic of Latvia on agrarian reform can be considered as the beginning of the land reform in rural areas of Latvia (Par agraro reformu..., 1990). Land reform was planned as part of agrarian reform. Soon this decision was followed by the Law "On land reform in rural areas of the Republic of Latvia" adopted on 21 November 1990 and two years later by the Law "On Privatisation of Land in Rural Areas" adopted on 3 July 1992. Land reform in urban area cities started one year after rural

reform with adoption of the Law "On land reform in the cities of the Republic of Latvia" adopted on 20 November 1991 (Table 3).

Table 3

**Legislative base, objectives and tasks of the land reform  
 in Estonia, Latvia and Lithuania**

<b>Countries</b>	<b>Legislative base of land reform</b>	<b>Statutory main objectives and tasks of land reform</b>
<b>Estonia</b>	Republic of Estonia Principles of Ownership Reform Act (13.06.1991) Land Reform Act (17.10.1991)	- to restore private ownership rights to the land, correcting the injustice created by the illegal expropriation of land; - to respect the legitimate interests of existing land users - to establish pre-conditions for more efficient land use - to establish pre-conditions for transition to market economy
<b>Latvia</b>	Resolution of the Supreme Council of the Republic of Latvia "On Agrarian Reform" (13.06.1990) Law "On Land Reform in the Rural Areas of the Republic of Latvia" (21.11.1990) Law "On Land Privatisation in Rural Areas" (03.07.1992) Law "On Land Reform in the Cities of the Republic of Latvia" (20.11.1991)	In process of gradual denationalization, conversion, privatization of state property and return of illegally alienated land reorganize the legal, social and economic relations of land use and land ownership both in rural and urban areas for:  - to promote the restoration of traditional lifestyles - to ensure the protection and management of natural and other resources - to ensure the preservation and improvement of soil fertility  - to expand the production of high-quality agricultural products  - to ensure urban development in accordance with public interest  - to ensure the protection and rational use of land
<b>Lithuania</b>	Law "On the procedure and conditions for restoration of property rights of citizens to existing real property" (18.06.1991) Law "On Land Reform" (25.07.1991)	- to ensure the protection of natural resources - to implement the right of people to acquire land in property and use it in accordance with the procedures specified by law - return illegally expropriated land to former owners - to transfer the land free of charge or for payment to persons wishing to obtain it - to assign State land for leasehold - to establish legal and economic conditions for development of national agricultural land market

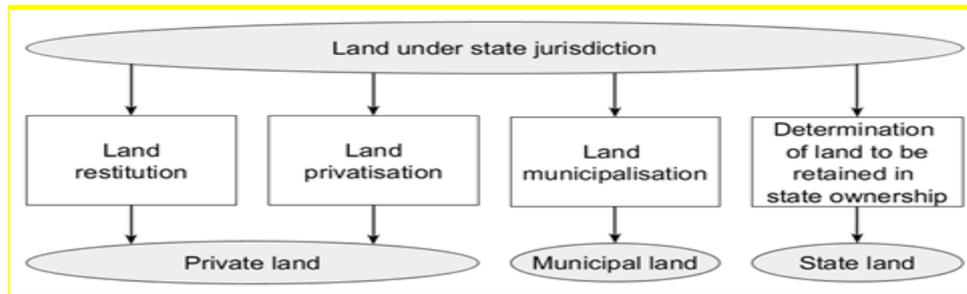
*Source: author's calculations based on land reform legislation*

Analysing the objectives and tasks of land reforms defined by law, it can be found that there is no significant difference between Baltic States, little difference has been discovered in the wording of main objectives. In all three countries as main tasks of land reform restoration of private property, return of illegally nationalised 50 years ago land, as well as respect of interests of existing land users have been mentioned. The laws of Estonia and Lithuania emphasise creation of legal and economic conditions for development of land market, but laws of Latvia more focuses on social issues - need for restoration of traditional lifestyle in rural areas and achievement of high quality agricultural products, as well as formation of urban environment in interests of society. All three countries also focus on the protection of natural resources and rational and efficient use of land as one of essential objectives of the reform (Table 3).

**2. Progress and procedures of land reform**

Until land reform, all land resources in the territory of Latvia, Lithuania and Estonia were subordinated under national jurisdiction, but as result of various processes of land reform it became as private

ownership of natural and legal persons, municipal or state authorities. Although procedural course of land reform in mentioned states differed, all measures could be divided into four main directions, results of which are illustrated in Figure 1.



Source: developed by author's based on legislative acts

Fig. 1. Main measures in frame of land reform

One of priority tasks in land reform legislation in all three countries was to correct injustice, return land ownership rights to former owners or their heirs. According to the legislation in Estonia and Lithuania, the first step was the return of land to the former owners, followed by privatisation of land - granting of land ownership rights for payment to the interested natural and legal persons. Subsequently, further the issues of land transfer to municipal and state ownership were solved. In Latvia, unlike Estonia and Lithuania, particularly in rural areas, the reform was carried out in two steps:

- in first stage (1990 – 1996) the land was assigned for permanent use;
- in second stage (period of 10-15 years, started in 1993) the land was transferred to ownership (Zemes reformai Latvijā..., 2000).

At the first stage, land for use could be requested by any person - former owner, existing land user and another person, as well as the local government and state institution. Priority was given to former landowners, except in cases specified by law. At the second stage, the land allocated for use was assigned for ownership. Decisions on restoration of land ownership rights and assignation of land in use in each country were taken by city municipality and local municipality, but the way to this decision was different in each country. Implementation of the reform in Estonia was delegated to local authorities, while for solving of specific issues were established committees, which examined applications, compensation issues etc. Land commissions at three levels (central, regional and local) were created in Latvia for the implementation of land reform. Local land commissions examined applications and made preliminary decisions on assignment of land primarily for use and further for ownership. In Lithuania land reform on regional level was organised by Agriculture Council of Ministry of Agriculture, but on local level – by specifically established services of agrarian reform.

In Latvia and Lithuania, decisions on assignation of land were made on the basis of specific projects - land survey projects, especially in rural areas. One project covered area of one former large agriculture enterprise. The projects were drafted on the base of applications of people. The Law also prescribed development of land survey projects also in cities and towns of Latvia, but in Lithuania there were developed detailed plans and land parcel development plans. In Latvia and Lithuania, the Law prescribed procedures (continuity) how to make decision, if there were two or more applicants to the some area. However, in Estonia land survey projects were not developed, boundaries of allocated land parcels were depicted on the map, which served as base of cadastre map.

There should be noted that in case of restoration of former ownerships should be taken into account the situation of 50 years under soviet system and is not necessarily to respect the boundaries

of former land parcels, but new properties should be formed as rational land units. Former owners often demanded to restore land strictly in former boundaries, creating conditions for inefficient land use.

In all three countries, the legislation prescribed compensation (in privatization certificates) to former landowners if they were unable or unwilling to restore land ownership.

After decision making by Land commission, followed land survey process and registration of newly formed properties into cadastre information systems and legal registers, which also were created in the course of the land reform.

### 3. Results of land reforms

Although completion of land reform has not been announced yet in any of three countries, however the main tasks of land reform in Estonia, Latvia and Lithuania have been fulfilled - by 2019 in Lithuania and Latvia the majority of land (93 % and 92 % respectively) has been registered as ownership, while in Estonia this rate is less – 57 %. Analysing land properties according to property status, it can be concluded that largest area of land was transferred to private ownership in Lithuania and Latvia (89 % and 71 % respectively), and majority of this land is owned by natural persons. In Estonia, compared to other two countries, private ownership is limited to 60 % of land properties, at the same time significantly higher proportion of land is owned by public authorities (Table 4).

Table 4

#### Breakdown of owned land in Estonia, Latvia and Lithuania on 01.01.2019, %

Property status	Estonia	Latvia	Lithuania
Owned by physical persons	58	51	75
Owned by legal persons		20	14
Owned by municipalities	1	2	1
Owned by the state authorities	41	27	10

**Source:** author's calculations based on date of information system of national land cadastre Estonia, Latvia and Lithuania

Analysing the results of the land reform published in monographs (Aleknavicius P., 2008; Zemes reforma - atslega..., 2012) and scientific publications (Jurgenson, E., 2016, etc.) and taking into account the experience of authors of the article, the authors have summarised a number of similarities in the progress and results of the Estonian, Latvian and Lithuanian land reforms.

- 1) In all three countries land reform has not been lasted accomplished according to the deadlines. The reasons for this are similar - when the reform was initiated, the organisers did not understand complexity of the process and extent of the works to be carried out. Due to long process, changes in policy frameworks led to variety of contradictions between different interests, leading to frequent amendments to laws and other legislative acts. These amendments on the one hand gradually improved land reform legislation, but on the other hand, led to some confusion for both their performers and new landowners.
- 2) At the beginning of the land reform there were shortages of specialists in land use planning and surveying. As necessity of cadastral surveying increased very fast, in this process were involved people who did not have such knowledge and skills. It worsened quality of cadastral surveying works; therefore mistakes arose in cadastral and legal registers. It is very important to mention that in first years of land reform in all three countries there were not established national geodetic systems, there was lack of optic and digital geodetic instruments, and therefore it was impossible to obtain accurate field survey data. Consequently, simple geodetic methods and photomaps were

- applied for allocation of land parcel boundaries. Local and free coordinate systems were also used carrying out for instrumental surveying of boundaries. National geodetic network for cadastral surveying was used only in the late 1990-s, when large amount of the land already was measured.
- 3) As one of the shortcomings of the reform in all three countries has been noted that in land reform laws (in Latvia and Lithuania) and in Land Consolidation Act (in Estonia) there was an obligation for forming new land parcels on land survey project to respect requirements of rational land use. However, in practice it did not really happened. The land of former owners or their heirs mainly was returned within former boundaries, by not taking into account the changes that had raised as a result of amelioration and other measures. Often this led to embarrassing, impractical spatial structure of ownership in rural areas, but in urban areas – to the properties where landowner and owner of buildings were different persons.
  - 4) Agricultural reform usually is one of the means of restructuring agriculture. However, existing land reform was not aimed to establishment of prospective agricultural enterprises, but to restoring justice in rural areas. In any of of the analysed countries, the legislation on land reform did not specify minimum area of land. Only the maximum areas for payment were defined. Consequently, very fragmented structure of land parcels has been developed in rural areas. In all three countries the average total area of land parcel allocated to natural and legal persons, according to the data of the Cadastre information systems, is 8 ha (data on 01.01.2018). By the way, large area of the land was assigned to people who didn't use this land. Due to small areas of land and also because landowners live remotely (far from his land) it was impossible to establish individual household and they are forced to rent out or sell the land (Aleknavicius P., 2008). Although the majority of rural residents buy the land, due to deterioration of agricultural conditions, loss of jobs, emigration etc., the population in rural areas has decreased in all three countries.

### **Conclusions, proposals, recommendations**

- 1) Decisions taken at the end of the 1980-s on creation of peasant farms in Estonia, Latvia and Lithuania played an important role in future land reform processes. The high demand for land, although the land remained in state ownership, created preconditions and experience for drafting of land reform legislative acts.
- 2) After analysis of the objectives of land reform and its implementation the authors made a conclusion that, in general, the main result in all three countries has been achieved - the land is returned for ownership to citizens of Estonia, Latvia and Lithuania, the right of people to acquire land has been exercised, as well as conditions for development of land market have been established. There can be critically discussed results of land reform focused on more efficient land use (in Estonia) or to ensure of rational use and protection of natural resources (in Lithuania) as well as restoration of traditional rural lifestyle (in Latvia).
- 3) For the first time, land reform in Estonia, Latvia and Lithuania covered the entire territory of country. It greatly increased amount and complexity of work, and affected the period of processes. The land reform created the related legal environment in all spheres of life. Not all laws, decisions and regulations were substantially evaluated or could not be foreseen and not all decisions led to the expected outcome. A great amount of responsibility had been delegated to local municipalities regarding decision making, although not all municipalities were prepared to deal with land issues.

Voluminous land reform activities faced with a lack of surveying and land management specialists, survey instruments etc.

- 4) In privatising the land, in rural areas of Latvia the principle "to property through land use" was observed. It ensured gradual privatisation of land as well as a more justified subdivision of land. This also showed that in fact not everyone who had applied land for use, privatised it in further course of reform. Such principle does not exist in Estonia and Lithuania. However, it should be noted that there are no significant differences in the results of the reform in Estonia, Latvia and Lithuania, the average total area of land parcel in rural areas in all countries is equal to 8 ha.
- 5) As positive moment in result of the land reform, it should be noted that modern system of cadastre and legal register was established and implemented in all three Baltic countries.
- 6) Although no one of the three Baltic States has declared on completion of land reform yet, after analysing results of land reforms it should be concluded that the next phase of the "land reform" needs to be carried out. Changing legislative acts should be planned measures of land consolidation or land use planning, in order to eliminate shortcomings that appeared during the reform and create conditions for rational land use, to eliminate the fragmentation of land and other disadvantages.

## Bibliography

1. Aleknavicius P. (2008). *Zemes santykiu pertvarkymas Lietuvos kaime 1989–2008 metais: monografija (Transformation of Land Relations in Lithuanian Village 1989–2008: monograph)*. Vilnius: Jandrija. pp. 447.
2. Auzins, A. (2008) *Zemes parvaldības pamati (Basics of Land Management)*. Rīga: RTU Izdevniecība. p. 106.
3. *Del pilieci nuosavybes teisiu i islikusi nekilnojamaji turta atstatymo tvarkos ir salygu. Istatymas (1991). (Regarding the procedure and conditions for the restoration of the citizens' property rights to the existing real estate. The law) 1991 06 18; Nr. I-1454. Valstybes zinis, 1991, Nr. 21–545.*
4. *Eesti NSV taluseadus (Farm Act of the Estonian SSR) (1989)*. Vastu voetud 6.12.1989. Retrieved: <https://www.riigiteataja.ee/akt/30680>. Access: 15.01.2020.
5. *Eesti Vabariigi omandireformi aluste seadus (Republic of Estonia Principles of Ownership Reform Act) (1991)*. Vastu voetud 13.06.1991. Retrieved: <https://www.riigiteataja.ee/akt/112122018009>. The English version is available in: <https://www.riigiteataja.ee/en/eli/ee/520122018006/consolide/current>. Access: 15.01.2020.
6. Jurgenson, E. (2016). *Land reform, land fragmentation and perspectives for future land consolidation in Estonia*. Land Use Policy, 57, 34–43.10.1016/j.landusepol.2016.04.030.
7. *Maareformi seadus (Land Reform Act) (1991)*. Vastu voetud 17.10.1991. Available at: <https://www.riigiteataja.ee/akt/112122018015>. The English version is retrieved in: <https://www.riigiteataja.ee/en/eli/ee/520122018008/consolide>
8. *Par agraro reformu Latvijas Republika (1990)*. Latvijas Republikas Augstakas Padomes lemums, 13.06.1990. (*Resolution of the Supreme Council of the Republic of Latvia On Agrarian Reform*). Retrieved: <https://likumi.lv/doc.php?id=76206>. Access: 17.01.2020.
9. *Par zemes privatizaciju lauku apvidos (1992) (Law On Land Privatisation in Rural Areas)*, Latvijas Republikas likums, pienemts: 03.07.1992. Retrieved: <https://likumi.lv/ta/id/74241-par-zemes-privatizaciju-lauku-apvidos>. The English version is available at: <https://likumi.lv/ta/en/en/id/74241-on-land-privatisation-in-rural-areas>. Access: 15.01.2020.
10. *Par zemes reformu Latvijas Republikas lauku apvidos (1990) (Law On Land Reform in the Rural Areas of the Republic of Latvia)* LR likums, pienemts 21.11.1990. Retrieved: <https://likumi.lv/ta/id/72849-par-zemes-reformu-latvijas-republikas-lauku-apvidos>. The English version is available in: <https://likumi.lv/ta/en/en/id/72849-law-on-land-reform-in-the-rural-areas-of-the-republic-of-latvia>. Access: 17.01.2020.
11. *Par zemes reformu Latvijas Republikas pilsetas (1991) (Law On land reform in the cities of the Republic of Latvia)* LR likums, pienemts 20.11.1991. Retrieved: <https://likumi.lv/ta/id/70467-par-zemes-reformu-latvijas-republikas-pilsetas>. Access: 17.01.2020.
12. *Par zemnieku saimniecibam Latvijas Padomju Socialistiskaja Republika (The Law On peasant farms in Latvian Soviet Socialist Republic)* Latvijas PSR likums (1989). Latvijas PSR Augstakas Padomes un Valdibas Zinotajs, 18.05.1989, Nr. 20.
13. *Zemes reforma – atslega uz ipasumu, 1990 – 2012 (2012) (Land reform - the key to real property, 1990 – 2012)*, zin.red. J. Mierkalne Riga, LR Valsts zemes dienests. 335 c.
14. *Zemes reformai Latvija 10 gadi 1990 - 2000 (2000) (Land reform in Latvia 10 years 1990 - 2000)* atb. red. J. Blite. Riga, Valsts zemes dienests. P. 160.
15. *Zemes reformos istatymas (Law on Land Reform) (1991a) – 1991-07-25; Nr. I-1607. Lietuvos aidas, Nr. 151.*

## ECONOMIC EFFECT OF SHORT-TERM PERIOD TAX BENEFITS IN MOUNTAINOUS PARTS OF GEORGIA

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**Abstract.** Migration processes of high mountains and population growth of cities have led to depopulation in mountainous regions, rising unemployment in the city and a had a decrease in agricultural products, ultimately provoke external migration processes. These problems are typical not only for Georgia but also for the post-Soviet countries and are relevant in the global context. The purpose of the study was to identify and analyse the effects of the short-term tax privileges for the mountainous regions of Georgia. The paper is dedicated to research and quantitative analysis of the impact of tax and social benefits on improving demographic conditions and regulating internal migration processes, both in the short and long-term perspective. The research methodology was based on the statistical processing of the survey results. For quantitative research, we used a structured questionnaire, which was developed by face-to-face interviews. Approximately 500 respondents were interviewed in 79 villages of 11 communities of Khulo, the Adjara Autonomous Republic, Georgia. The study revealed that by regulating tax and social benefits, it is possible to partially manage the internal migration processes of the mountainous region in the short run, while in the long run, a complex approach to the issue is important. In the mountainous parts, tax, social and other benefits will have a positive economic effect in the short term. Increasing the amount of income for individuals and legal entities is one way to stimulate the rural economy.

**Key words:** migration, economic demography, taxes

**JEL code:** R23

### Introduction

For Georgia, as well as for many other countries around the world, the control of internal migration processes is an important problem ("*Problems with demography and sociology*", 2017). Emptying villages due to economic and social conditions has the negative impact on the country's economic parameters and demographic security. The population moving to the city is competing on labour market with the city's population that increases the number of unemployed residents and the rate of external migration, which ultimately poses a major threat to the country's normal development (Totadze A., 2012). In our opinion, another negative factor, which is also related to internal migration, is the so-called "Brain drain". A talented, hard-working worker who can't find a job either in the village or the city, has to go abroad and look for the right job for his skills and abilities. The Highlands of Georgia are distinguished with such talented, clever and purposeful young people, but because the village lacks production, there are no jobs. Thus, young people who are well educated in the city, cannot find the jobs relevant to their skills and abilities. They no longer think of returning to villages and prefer to live in the city or work abroad.

Our country has been suffering from this problem since the 1990s of the last century, and despite a number of different activities, emptying of the villages still continues (Tsuladze G., 2016). The economically active population of the village comes to the city and as a result of our surveys the number of rural populations reduces every year (Tsiklashvili N., Tchanidze K., 2019). The Georgian government has always paid attention to this problem. Taxes and social benefits have been imposed on the mountains to improve the demographic improvement and to halt the internal migration (Law of Georgia on Development of Highland Regions (in Georgian)).

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The practice of tax exemptions for highland regions has been successfully applied in many countries around the world. The purpose of establishing such benefits is essentially the same in all countries, but the results may vary depending on the country.

For example, the Latvian government also applies tax incentives to increase economic and social well-being. According to Uldis Rutkaste (Economist of the Bank of Latvia), the volume of tax benefits in Latvia is 2.5 billion Euro is a year. However, Latvia intends to revise legislation on benefits. Latvia also has three free economic zones and two free ports. Taxes in Free Ports and Special Economic Zones regulate the use of direct and indirect tax privileges in special economic zones. Several countries in the world have tax exemptions on enterprises that produce goods and services in the highlands, such as Canada, Argentina, Greece, Zambia, Mozambique, Oman, Fiji. These countries have different rates and benefits for entrepreneurs and for the population - children and retirees. In Canada, tax benefits are enjoyed in the mountainous region of Yukon, Alberta Province (SPLASH-db.eu, 2015)

The present paper discusses the short-term effects of the tax benefits imposed on one of the mountainous regions of Georgia, the existing problems and ways to solve them.

### **Research methodology**

For the study, we selected entrepreneurs registered in Khulo, one of the mountainous regions of Georgia, and conducted a survey. The study included two components: quantitative and qualitative. Qualitative research analysis includes types of business entities, income, level of satisfaction with tax benefits, opportunities for expanding entrepreneurial activity. For the quantitative research method, we used a structured questionnaire, which was completed by the face-to-face interview method. The questionnaire with its structural content consists of open and closed questions. It was possible to provide several answers to several questions. Research methods included oral history and observation. In the process of filling in the questionnaire, respondents were able to identify the problems they were facing and their problem-solving vision. Two groups of researchers were conducting face-to-face surveys in 79 villages of the Khulo Autonomous Republic, 79 villages. About 500 respondents, including legal and natural persons, were interviewed.



**Photo. Village Beshumi 1850-1900 meter from sea level**

### **Research results and discussion**

On 16 July 2015 the Parliament of Georgia approved the Law on Development of Highland Regions. The purpose of this law is to identify benefits to stimulate the socio-economic progress of the mountainous regions, which will ensure the well-being of people living in the highlands, raising their living standards, promoting employment, improving their social and economic status. A person permanently residing in the Highlands is entitled to income and property tax benefits under the Tax Code. In addition, an entrepreneur who is granted the status of a high-mountain settlement

enterprise under the legislation of Georgia shall be exempt from taxation for the term and in accordance with the Tax Code of Georgia (10 years from granting status). Within the limits of our research we searched for entrepreneurs registered in Khulo, one of the mountainous regions of Georgia and sought to find out the motives for their economic activity, their economic status, the effects of the "Mountain Law" and future development prospects. As it turned out, there are about 210 (National Statistic Office of Georgia, 2020) businesses in this region and their main areas of activity are: beekeeping, retail sale, fruit, citrus, subtropical crops, vegetables, herbs, technical crops, cereals, orchards, legumes, mushrooms, oily crops, grapes, milk and dairy processing, market (bazaar), planting material, seed processing, veterinary drug processing, agrochemicals, veterinary pharmacy, zoo shop, veterinary medicine, meat and meat products, milk and dairy products, flour products, food additives, food fortifiers, spices, animal food, animal food additives, cattle, eggs, flour and flour products, biscuits, chocolate, sugar, tea, coffee, non-alcoholic beverages, mineral water, ready-made foods, culinary products, oil, margarine, mayonnaise, confectionery, other public catering facilities: Khachapuri bakery, alcoholic drinks, primary production and packaging of agricultural poultry.

About 500 respondents from the Khulo municipality of Adjara were interviewed. Most of the interviewed entrepreneurs are granted high-mountain settlement enterprise status (68 %), only a small proportion do not have this status (32 %). The reason why enterprises that operate in Khulo do not have this status may be that some are waiting for status to be granted, but some of them do not meet the criteria set by law. One of the most important criteria is that business owner has a permanent resident status in the mountainous region. If the owner of the business does not have this status, then the enterprise established by him will not receive this status. Despite these limitations, there are quite a number of law firms in the Khulo municipality that carry out entrepreneurial activities for profit. Most of the enterprises surveyed operate all year round (77 %), some seasonally (23 %). Almost all of them are familiar with Mountain Law (92 %) (8 %). The benefits provided by law: profit tax, property tax, income tax are enjoyed by most of them (40 %). Companies report their monthly income of GEL<sup>1</sup> 1501-2000 (61%), GEL 2000 (more than 29 %), GEL 1001-1500 (8 %), GEL 501-1000 (2 %) and none of them earn less than GEL 500. Most of the interviewed entrepreneurs believe that the economic situation of their enterprise has improved as a result of the enactment of the "Mountain Law" (69 %), with some abstaining from answering this question (29%). The year of establishment of these enterprises is significant, the majority of which have been registered for the last 4 years, i.e. since the launch of the state-run Entrepreneurship Support Program "Produce in Georgia". To use this program, they were instructed to obtain legal status.

The number of employees in companies varies between 1-25 and the monthly income of employees is GEL 101-500 (77 %), GEL 501-1000 (21 %), GEL 1001-2000 (2 %). Given the fact that their employers have a benefit in the part of income tax, employees receive the above salary without deduction. Part of the survey results is presented in figures 1-8.

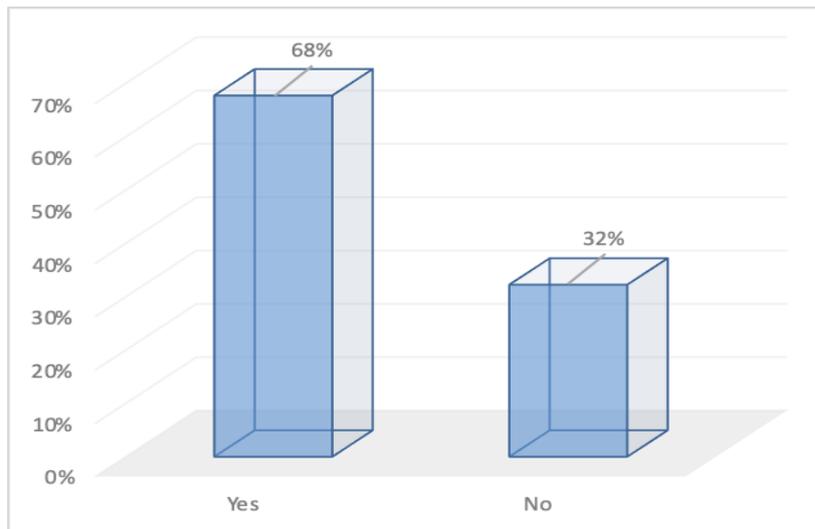
In the fourth year after the entry into force of the "Law of the Mountain", its effects are visible. From the data analysis of the survey, we came to some important conclusions.

- Motivation to start an entrepreneurial activity.

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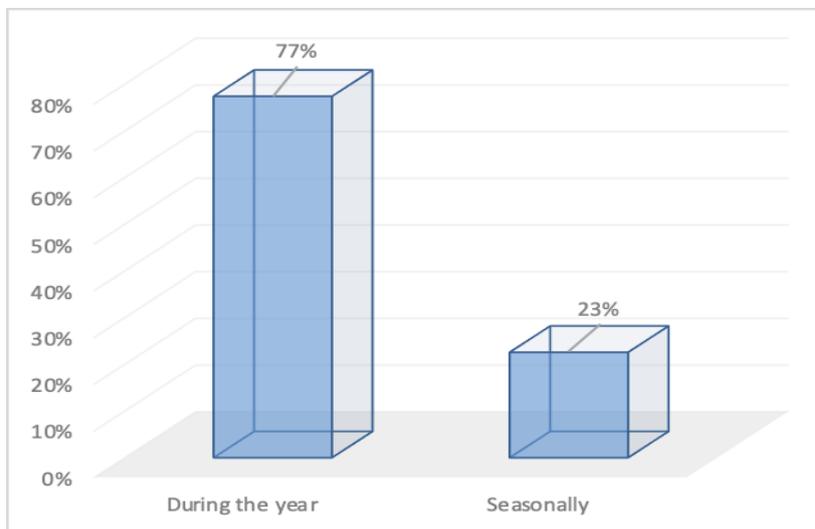
<sup>1</sup>GEL - Georgian Lari

- The number of illegal, unregistered companies has been reduced by the requirement of compulsory registration. Companies no longer have a motive to do business without registration. To get the benefits, they only need to register and get a Highlander Enterprise status. Entrepreneurs are tax-exempt for 10 years after starting a business, which is a great time to raise capital and motivate new businesses.
- Creating jobs. Every company employs at least one person. If you look at the number of existing companies (210 operating companies) we can conclude that at least 210 jobs are created. The growth trend is expected in the future.
- Since the Law of the Mountain promotes the mobilization of the income on the site, this will result in the reduction of vulnerable families and the savings the state spends on subsidizing vulnerable families.
- According to the poll, also as a result of the interviews taken at the site, we believe that the tax losses are negligible compared with the social and economic effects of the law. Moreover, it can be assumed that the long-term social and economic effects will exceed tax losses, because this law creates the income at the place, improves the material conditions for the population, which in turn will lead to the improvement of socio-economic conditions and in this case the state budget expenses that it has in the form of different social insurances and assistance, will be reduced.
- However, it should also be noted that the Law of the Mountain may have quite different results in the short and long term. The law has two goals: mobilizing income at the site and consolidating the population in the mountains. The research has shown that the first purpose of the law is in the process of implementation, only a short time has passed, but the effect of income mobilization is evident, which is confirmed by the population survey. As for the second goal, it is still difficult to say anything at this time, however, depending on the sentiment of the population and considering one of the principles of economics that people respond to incentives and save part of their income, we may expect that the desire of welfare improvements will outweigh the benefits of income and they will still decide to move to the city to improve their living conditions and stay in the village only seasonally. As a proof of this, it can be said that nowadays the wealthy part of the population has already sent their children to the city because of better conditions, better education and career.
- It can also be concluded that in the long run only the improvement of living conditions and infrastructure can increase population in the mountains. Residents in many villages are still suffering from road, water, heating and other household problems. So, they are trying to get their children to live in better conditions and to help them stay in town. Everyone has the right to live in a comfortable environment and no high-mountain population is an exception.



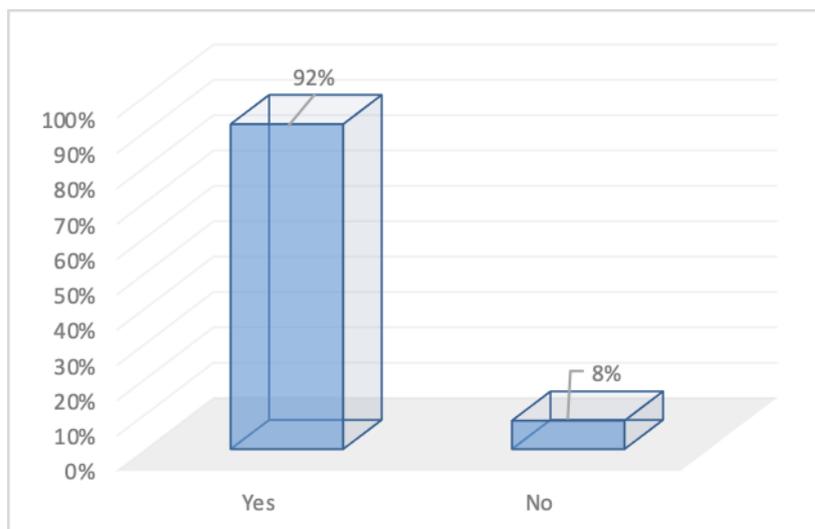
Source: author's calculations based on survey

Fig. 1. Question 1. Do you have Highland Settlement Enterprise status?



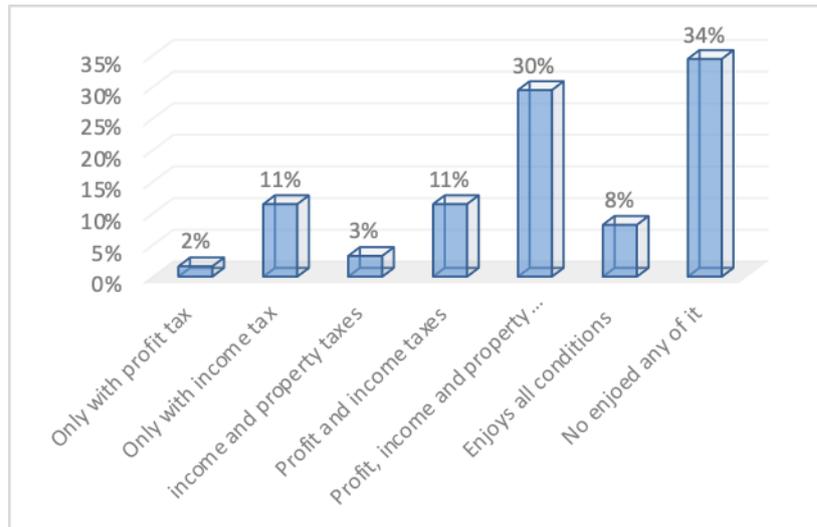
Source: author's calculations based on survey

Fig. 2. Question 1. Period of activities



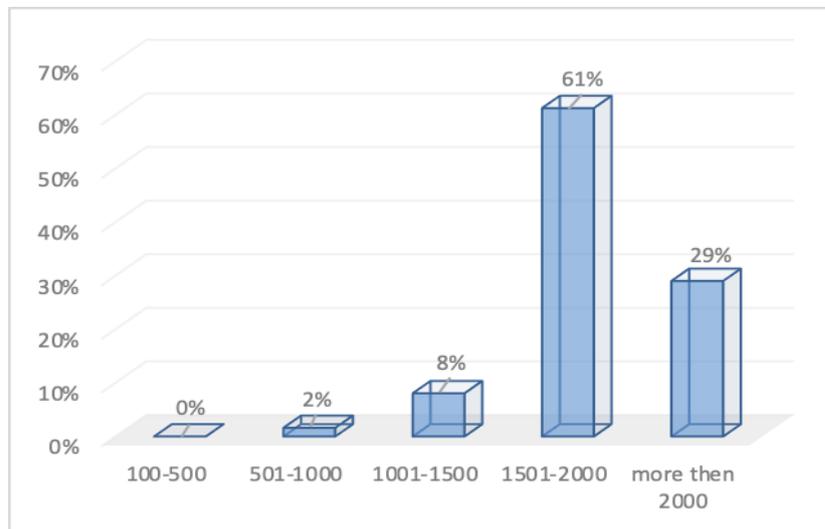
Source: author's calculations based on survey

Fig. 3. Question 3. Do you know the "Law of the Mountain"?



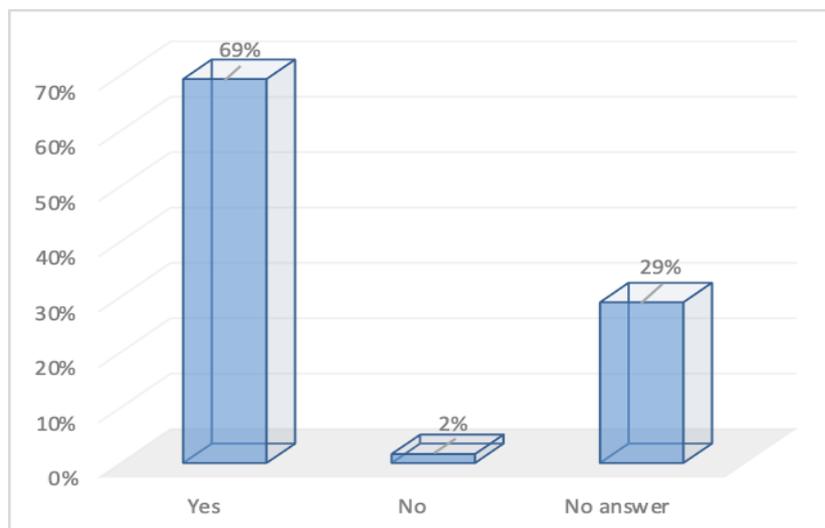
Source: author's calculations based on survey

Fig. 4. Question 4. Which of the following tax benefits do you enjoy within the "Law of the Mountain"?



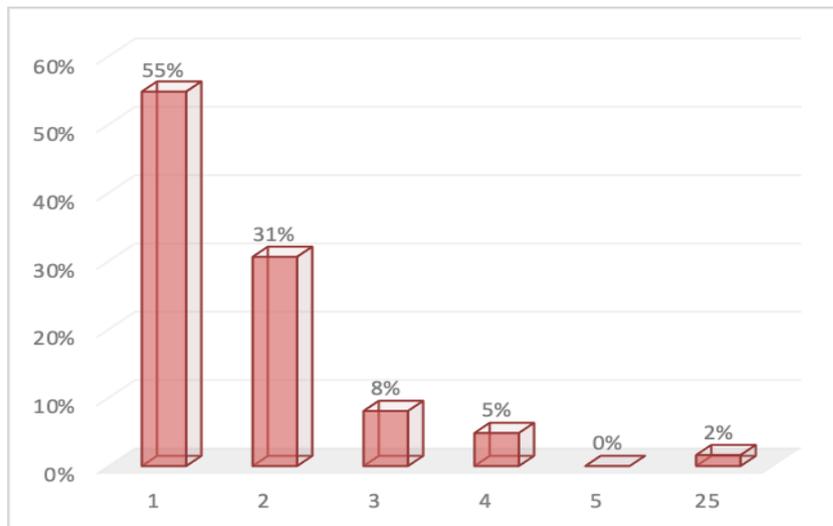
Source: author's calculations based on survey

Fig. 5. Question 5. How large is your company's income?



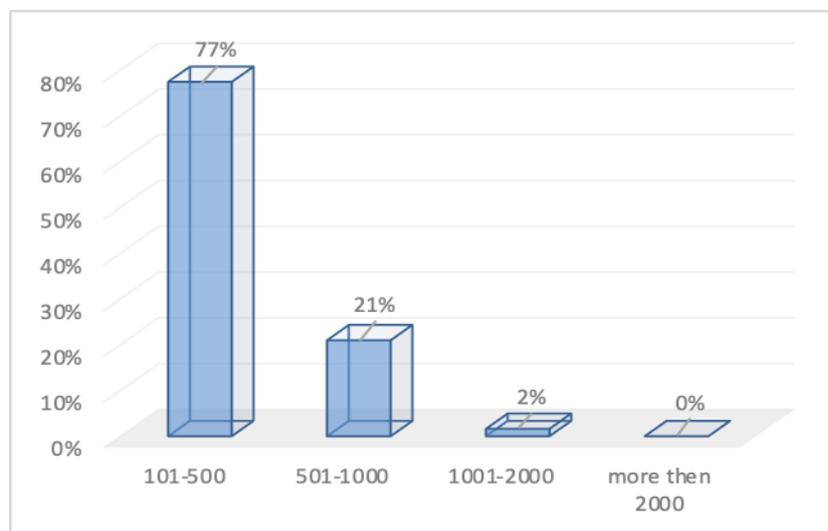
Source: author's calculations based on survey

Fig. 6. Question 6. Do you think the economic situation of your company has improved since the enactment of "Law of Mountain"?



Source: author's calculations based on survey

Fig. 7. Question 7. How many employees do you have?



Source: author's calculations based on survey

Fig. 8. Question 8. Monthly income of employees

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## Bibliography

1. "Georgia Migration Profile" (2017). Principal Commission on Migration Issues, Tbilisi (In Georgian).
2. "Problems with demography and sociology" (2017). Collection of Proceedings. Ilia State University, Institute of Demography and Sociology, Tbilisi.
3. National Statistic Office of Georgia (2020). <http://www.geostat.ge/>
4. SPLASH-db.eu (2015): Policy: "Migration Policies: Latvia" (Information provided by Elina Apsite-Berina). <https://splash-db.eu>
5. Law of Georgia on Development of Highland Regions (In Georgian).
6. Totadze, A (2012). "Adjara Population". Publishing house "Universal" Tbilisi.
7. Tsiklashvili, N., Tchanidze, K., Surmanidze, Z (2019). "The Process of Internal Migration of the Adjarian Highlands To The Modern Stage". The institute for the research of economic and social problems of globalization, Tbilisi.
8. Tsuladze, G., Sulaberidze, A (2016). "Demographic Characteristics of Georgian Regions", Ilia State University, Institute of Demography and Sociology, Tbilisi.

## COMPLIANCE OF FIRE SAFETY MEASURES FOR ACCOMMODATION OF PEOPLE IN RIGA SCHOOLS

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**Abstract.** This article describes the situation with fire safety at Riga schools regarding their compliance with the fire safety requirements set in Latvia for accommodation of people in schools.

The objective of the current paper was to research and evaluate the compliance with the requirements of regulatory enactments regarding the accommodation in Riga schools and analyse the actual fire safety situation during accommodation of participants of the Dance and Song Festivals in Riga schools.

The research was conducted in spring of 2018, prior to the Dance and Song Festival, assessing the compliance of 60 accommodation sites with the Latvian regulatory enactments on fire safety. During the Dance and Song Festival, it was planned to organise accommodation places in schools for 24 000 persons – participants of the festival events in the city of Riga.

Ensuring fire safety at public facilities is a topical issue for any country, since the fulfilment of fire safety requirements is important not only in cases, when school premises are intended to be used for temporary accommodation of participants of the Dance and Song Festivals for a period not exceeding a week, but also in cases when children have to stay in school premises every day to receive the knowledge they will need in their future lives and the fulfilment of fire safety regulations is an important condition for providing the overall safety.

**Key words:** fire safety management, injury prevention, burn, accommodation, deficiencies.

**JEL code:** R19, L89

### Introduction

The paper faces the problem: the situation with the provision of fire safety measures at short-term accommodation sites for participants of the Dance and Song Festivals in Riga.

Topicality of the current paper is defined by the research and analysis of the problem regarding the safety of participants of the Dance and Song Festivals that pertains to fire safety measures at places of accommodation during the Dance and Song Festivals. Ensuring fire safety measures is an existing complex issue, as standards are changing and new technologies are developing to make life more comfortable and safer for people. Fire disaster happens to be one of the world's most common and destructive disasters (Pontip Stephen Nimlyat et al., 2017). Life and health of people and participants in organised events depend on the proper functioning of a fire safety system in the event of emergency. In order to reduce this hazard, plenty of requirements and standards have been developed, the timely and correct execution of which allows to reduce the existing hazards to the minimum.

The characteristics of the fire safety systems installed at accommodation sites in Latvia are very different, but in general, an accommodation site must comply with the safety requirements set by the Cabinet Regulation, which are mandatory for all temporary accommodation sites that are not used for permanent accommodation, i.e. all sites not engaged in provision of hotel services.

The subject matter of the research was fulfilment of the requirements of the Cabinet Regulation No. 238 adopted on 19 April 2016 "Fire Safety Regulations" (hereinafter – the Regulation) during the Dance and Song Festivals.

As the research object, 60 accommodation sites in Riga for participants of the Dance and Song Festivals – schools (hereinafter – the educational establishments) were selected.

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The objective of the research is: "to perform a research and evaluate the compliance of the accommodation requirements at Riga educational establishments with the regulatory enactments and analyse the actual fire safety situation at the time of accommodation of participants of the Dance and Song Festivals in Riga schools".

To achieve the aforementioned objective, the following tasks have been solved:

- 1) 60 educational establishments in Riga have been inspected, checking the fire safety situation;
- 2) the existing deficiencies in provision of fire safety measures have been identified;
- 3) factors contributing to the deficiencies regarding the overall situation at accommodation sites have been analysed.

The following scientific methods were applied in the study: the analysis - actual fire safety rules were divided into separate points and examined in separate parts concerning appropriateness of the Song Festival accommodation capacity and the fire safety situation; the induction - with the help of this method general judgments and conclusions were made on the individual shortcomings of each educational institution in the background of the survey.

### **Urgency of the situation**

Major attributes to the poor situation with fire safety in Latvia in the 21<sup>st</sup> century are still the insufficient funding to ensure the compliance of the fire safety situation with the requirements of the adopted regulatory enactments. Today not only reaction at the time of a fire is of importance, but also prevention measures that do not allow fire to occur. A fire protection system is a prevention and suppression technique adopted in the designing of a building (Kironji Maina, 2014). Educational establishments are places where young people are mostly present in the study process and preventive measures should, therefore, be given special attention. Generally, young people aged 18 to 24 make up a significant proportion of people who are unsafe with regards to fire (Ian Lambie, et al., 2015). In total, as of 1 September 2019, 109 general secondary education institutions, (Education, Youth, and Sports Department of Riga City Council, 2019) where students receive basic and secondary education, were operating in Riga. However, educational establishments in Riga are used not only within the framework of the study process, but also when organising large festivals with a large number of participants involved.

The tradition of the Song festivals, inspired by the protestant culture, has become an integral part of the Baltic States' identity. The Song festivals were created to demonstrate the diversity of heritage and national history (Repsiene, 2016). In 2018, from 30 June to 8 July, the XXVI Latvian Song Festival and the XVI Dance Festival (Latvija 100, 2019) were organised, when 43 000 participants from 118 Latvian municipalities, as well as other countries where Latvians support and develop the Song and Dance Festival traditions, arrived to Riga. In Latvia, there are 69,600 amateur artists who take part in different amateur art groups: they dance, sing in choirs, make theatre or come together to knit or weave. They form 3.5 % of the total number of inhabitants in Latvia in 2015. The majority of these amateur artists sustain the tradition of the Nationwide Song and Dance Celebration in Latvia (Tjarve et al., 2017).

During seven days, over 65 events took place - chorus, dance, brass orchestra, *kokle* (*national Latvian musical instrument*), folk music, vocal ensemble, folklore group and other concert programmes in Latvian folk attire, exhibitions of applied folk art and amateur theatrical performances. 500 000 spectators could attend the festival (during paid and free events) (Nra.lv, 2019).

One of the important issues in organisation of such festivals is accommodation of its participants. It is well known that the number of the participants is very large and the hotels available in Riga just cannot provide rooms for all, where they could have rest after rehearsals, as well as rooms to spend night. It can be concluded that hotel services are used not only by the festival participants, but also by guests of the city who arrive specially for the Song and Dance Festivals. Therefore, to ensure the accommodation of participants, as a positive practice, educational establishments are used, where the participants relax between rehearsals, get ready for performances and spend nights, so that there is no need to go home because it would take a lot of time. The results of this research are significant to demonstrate the overall fire safety situation to those who are interested, as well as to ensure interest of the responsible institutions to provision of safety in the premises of the educational establishments.

### **Research of the situation and analysis of deficiencies**

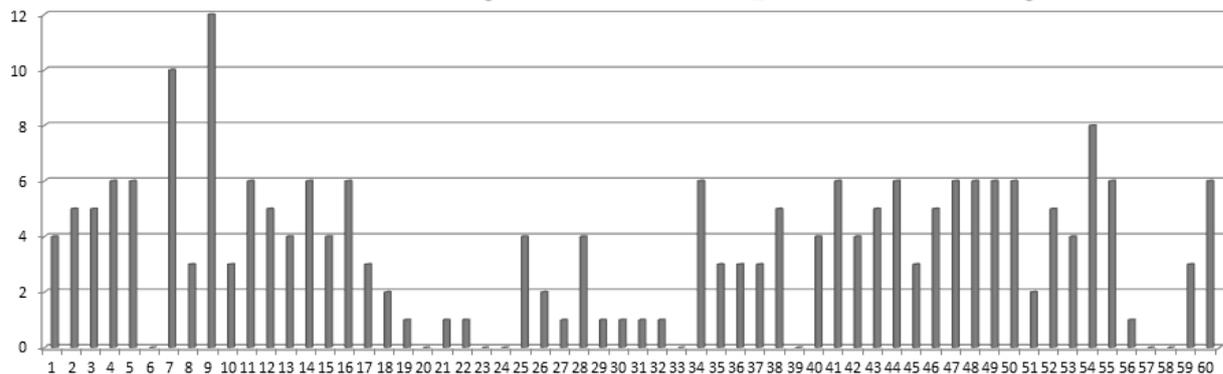
Observation of the Regulation is an important prerequisite for provision of safety measures, as well as "hazards associated with fire outbreaks in buildings need to be addressed efficiently and effectively" (Rahardjo et al., 2020). People spend much of their time in buildings and as such the term fire safety is referred to as preventing fire, restricting the spread of smoke and fire, and extinguishing a fire, and providing quick and safe evacuation (Littlewood et al., 2017).

During inspection of the educational establishments, Table 1 was compiled, reflecting shortcomings in the field of fire safety in each educational establishment, as well as summarising information across all educational establishments and identifying common deficiencies. Table 1 provides in a horizontal row all educational establishments included in the research, where participants of the Dance and Song Festivals were accommodated. The vertical column provides Articles of the Regulation within the framework of which the research has been performed. For each case of revealing an actual non-compliance with the Regulation, 1 point is awarded in the Table. When an educational establishment has several buildings and each of them has similar deficiencies, the points are summed up; for example, if there two buildings, both with similar deficiencies, the digit 2 will appear in the Table. When the premises and fire safety measures there comply with the requirements of the Regulations, this will be indicated with the digit 0. Thus, the educational establishments that are fully compliant with the requirements of the Regulation have the digit 0 in Table 1, next to the respective Articles.



evacuation takes place, keys from the doors are not available at once and very often the keys are somewhere far from the evacuation exit. As a result, the evacuation door does not fulfil its functions and persons cannot get out of the building freely. Such type of deficiencies forms 9.1 % out of all or 33.3 % of all educational establishments have such deficiencies. This Article is directly related to Article 243 of the Regulation, which stipulates that doors on evacuation routes must be opened easily from the inside of a premise, without obstacles. It has been identified that there are obstacles in front of the evacuation doors, such as locked bars. Such type of deficiencies has been identified at 11 educational establishments.

The number of deficiencies at each establishment separately is provided in Figure 1.



Source: author's calculations based on research information

Fig. 1. Number of deficiencies

Deficiencies have also been identified regarding compliance with Article 266, due to the fact that fire extinguishers are not placed appropriately, often too high. The Regulation requires that the height to reach the handle of a fire extinguisher may not exceed 1.5 metres. Administration of the educational establishments explains that, when the devices are placed in accordance with the requirements of the Regulation, children often play with them during breaks and several times they have been activated. Such type of deficiencies has been revealed at 19 educational establishments and form 8.6 % out of all or 31.3 % of all educational establishments have such deficiencies.

There are also deficiencies identified regarding compliance with Articles 206 and 340.2, due to the fact that premises of the educational establishments were mostly built during the period from 1950 to 1990 and systems with escape exit lighting and voice notification were not available at that time. The deficiencies regarding both Articles have been identified 16 times. Still, it must be positively noted that administrations of the educational establishments nevertheless install such systems by using their own budgets, but the process does not go on very quickly. In total, the failure to comply with these Articles has been established at 14.6 % of all educational establishments.

Deficiencies have also been identified regarding compliance with Article 234, due to the fact that evacuation exits, placement of fire extinguishers differ from what is provided in the evacuation plans. Such type of deficiencies indicates to poor fire safety management at educational establishments – deficiencies have been revealed at 14 educational establishments and form 6.4 % out of all. It is important to note that the emergency plan should include emergency disposal measures after the fire, emergency rescue operations, rescue equipment and supplies to protect, post disaster relief and resettlement of personnel and a series of related issues as the operation of the steps (Meng et al., 2016).

Deficiencies have also been identified regarding compliance with Article 247, due to the fact that distances to fire extinguishers have been incorrectly estimated, or their number does not comply

with the requirements of the Regulation, there are not enough extinguishers, although their capacity is higher than required. This deficiency is mostly caused by poor knowledge of the administration how to calculate the required amount of fire extinguishers at the educational establishment. Such type of deficiencies has been revealed at 13 educational establishments and in total constitutes 5.9 % of all deficiencies. Similar number of deficiencies have also been identified in the field of occupational safety, which is closely linked to fire safety measures. Administration of the educational establishments has not identified the site for assembling of employees and pupils in the event of an evacuation.

Deficiencies have also been identified regarding compliance with Articles 246.6 and 340.1. The first Article prohibits changing of the door opening direction without complying with the requirements laid down in the construction standards, while the second Article provides that a facility, which is not intended for accommodation of people at night, may provide it, on condition an automatic fire detection and alarm system is installed at the facility – this has not been done due to the installation costs. Non-compliance with both requirements has been revealed at 12 educational establishments and forms 5.5 % each out of the total number of deficiencies. Fire detection system is an important component in surveillance systems. Fire sensors are, in fact, complementary to conventional point sensors (e.g. smoke and heat detectors), which provide people the early warnings of fire occurrences (Bu et al., 2019). Installation of such systems is particularly important for educational establishments, where there are plenty of people, mostly children, and it must be concluded that the failure to provide such systems when participants of the Song and Dance Festivals are accommodated is unacceptable and increases the hazard considerably.

Deficiencies have also been identified regarding compliance with Article 260, due to the fact that canteens that provide food are not equipped with flame retardant mats. This is mostly caused by the fact that the previous Regulation did not contain such requirements and the administration do not know that flame retardant mats are required. Hence, the explanation is that the administration does not follow changes in regulatory enactments.

Having considered all deficiencies, it has been established that only eight educational establishments have completely fulfilled the requirements of the Regulations, so participants of the Song and Dance Festivals can be accommodated there, as well as nine educational establishments have just one deficiency, which can be eliminated fast, if funds are allocated to improve their fire safety systems. In total, only 17 out of 60 educational establishments can be used during the Song and Dance Festivals, provided a part of them makes immediate improvements of their fire safety systems and elimination of deficiencies.

Other deficiencies do not have a systemic character and it can be stated that they are mainly related to the perfunctory attitude of the administration of educational establishments. In general, the main factors for the fire safety deficiencies are non-compliance with the provisions of the Regulation, due to general shortcomings in the common preventive safety system, which are related to the lack of funds, negligence, inappropriate or damaged components of the safety system that constitute the general safety system of an educational establishment. A situation is made possible, when smoke can quickly spread across the entire educational establishment, preventing safe evacuation of people. It must be concluded that the State Fire and Rescue Service, which controls educational establishments, is not capable of influencing the administration of educational establishments, the actual fines are not imposed when writing safeguards, since the effective

provision of fire safety measures requires funds that are not allocated to the budget institutions in the required amount.

## Conclusions

The authors carried out a study and assessed the accommodation facilities of Riga general education institutions, as well as established their shortcomings and deficiencies, which allows to judge on the lack of full preparedness of the institutions for the accommodation of participants of the Song and Dance Festival.

As a result of the research, the general compliance of the fire safety system at educational establishments has been determined. 60 general education establishments in Riga, which are intended for accommodation of participants of the Song and Dance Festivals, have been inspected, where the fire safety saturation has been studied. Existing deficiencies in the provision of fire safety measures have been identified. An analysis of the overall situation at the places of accommodation has been performed. The current research established that any further delay on the part of the administration of educational establishments may endanger the lives of people who are accommodated in such premises. This is an initial research, with a limited number of facilities – as a result, the general data on educational establishments of the city of Riga may differ. The results have revealed the need to improve fire safety measures that have not been provided by the administration of educational establishments and that, in view of the established deficiencies, accommodation of people during the Song and Dance Festivals is inadmissible at most of the educational establishments and may result in a wide-scale tragedy. Ensuring fire safety requirements does not mean that the fires have been fully eliminated at educational establishments that observe the Regulation, but fires are reduced to the minimum, in order to maximally protect human lives and property of educational establishments.

## Bibliography

1. Bu, F., Gharajeh, M.S. (2019). Intelligent and Vision-Based Fire Detection Systems: a Survey. *Image and Vision Computing* Volume 91. Article 103803.
2. Dziesmu svētki 2018. *Nra.lv* (2019) Retrieved: <https://nra.lv/temas/123-dziesmu-svetki-2018.htm>. Access: 15.11.2019.
3. Education, Youth, and Sports Department of Riga City Council. Retrieved: <https://katalogs-iksd.riga.lv/lv/izglitiba-iestades/skolas/filterinst/all>. Access: 15.10.2019.
4. Kironji, M. (2014). Evaluation of Fire Protection Systems in Commercial Highrise Buildings for Fire Safety Optimization A Case of Nairobi Central Business District. *International Journal of Scientific and Research Publications* Volume 5, Issue 1: pp. 2250–3153.
5. Lambie, I., Best, C., Tran, H., Ioane, J., Shepherd, M. (2015). Risk Factors for Fire Injury in School Leavers: A Review of the Literature *Fire Safety Journal* Volume 77, pp.59–66.
6. *Latvija 100*. (2019). Retrieved: <https://www.lv100.lv/programma/kalendars/visparejie-latviesu-dziesmu-un-xvi-deju-svetki-2018/>. Access: 01.11.2019.
7. Littlewood, J. R, Alam, M., Goodhew, S., Davies, G. (2017). The 'Safety Gap' in Buildings: Perceptions of Welsh Fire Safety Professionals, *ScienceDirect, Energy Procedia* Volume 134. pp. 787–796.
8. Meng, D., Yao, H., Cui, T., Sun, Y. (2016). Survey and Countermeasure Discussion of College students' Campus Fire Safety. *Procedia Engineering*. Volume 135. pp.25 – 28.
9. Nimlyat, P.S., Audu, A.U., Ola-Adisa, E.O., Gwatau, D. (2017). An Evaluation of Fire Safety Measures in High-rise Buildings in Nigeria. *Sustainable Cities and Society*. Volume 35, pp.774-785
10. Rahardjo, H.A., Prihanton, M. (2020). The Most Critical Issues and Challenges of Fire Safety for Building Sustainability in Jakarta, *Journal of Building Engineering* Volume 29. Article 101133.
11. Repsiene, R. (2016). The Song Celebration as Power of Cultural Memory and a Mission of Modernity. *Journal Culture Crossroads* Nr.1. pp.20-35.
12. Tjarve, B., Zemite, I., Freiberga, K. (2017). Fiscal Decentralisation in Amateur Art Sector in Latvia: Case of Song and Dance Celebration. *TRAMES*. Volume 21(71/66), Issue 4, pp. 383–402.

## FINANCIAL VIABILITY OF CIRCULAR BUSINESS MODELS IN TYRE RECYCLING INDUSTRY IN LATVIA

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**Abstract.** The end-of-life (EOL) tyre recycling industry in Latvia is encountering economic and sustainability challenges, which require solutions by various stakeholders. Improvement of tyre waste management and recycling is important within the context of sustainability and the new streamlining of circular business models. Its importance is also recognized at the European Union level in relation to the further strategic goals and the European Green Deal. In addition, the tyre recycling industry in Latvia demonstrates a relatively unfavourable financial situation, which is one of the most significant factors hindering the introduction of new circular business models. The aim of this research is to clarify the challenges related to the financial viability of tyre recycling companies adopting the new circular business models. The main research methods are literature review, semi-structured in-depth interviews, case studies and financial analyses. There are large stocks of EOL tyres and on average just 50 % of them are recycled. The tyre waste management companies are not motivated to supply EOL tyres to recycling companies. On the other hand, due to various reasons, most of the tyre recycling companies are not working with their maximum production capacity. The research results reveal that the tyre recycling companies mostly run traditional and inefficient business models that require large operating costs and ensure comparatively low profitability. In order to enable more efficient and environmentally friendly tyre recycling process, the companies should implement new, investment intensive technologies. Yet, they face critical issues of liquidity and financial returns. Major conclusions are related to the necessity to develop several business models interlinked within one portfolio thus ensuring the manufacturing of various products with higher added value and quality. This may maximise the profits and improve the financial viability of tyre recycling business models.

**Key words:** circular business models, entrepreneurship, financial viability, tyre recycling.

**JEL code:** M19, L26, L65

### Introduction

The tyre recycling industry in Latvia is unprofitable with the traditionally applied business models that have high operational costs. Some waste management companies are not interested in recycling of tyres, instead they are collected in various storage units and occasionally illegally discarded. This justifies the need to investigate the challenges and reasons that hinder the tyre recycling industry to introduce and adopt new circular business models providing environmentally responsible solutions.

**The aim** of this paper is to clarify the challenges related to the financial viability of tyre recycling companies adopting the new circular business models. The main empirical **research question** is – What is the financial performance of tyre recycling companies and what are the main obstacles interfering the development of new, financially viable circular business models. The main **tasks** of this research are as follow: 1) to investigate what are the theoretical interpretations and discourses related to the circular business models and recycling; 2) to describe the general characteristics of the tyre recycling companies in Latvia; 3) to assess the financial performance of tyre recycling companies and identify the main obstacles that interfere the development of new, financially viable circular business models.

**The hypothesis** provided – introduction of new circular recycling business models may improve the financial viability of tyre recycling companies.

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The research is based on the literature review, semi-structured in-depth interviews, case studies and financial analyses.

## **Research results and discussion**

### **1. The circular economy and circular business models**

The Circular Economy (CE) is focusing on the extension of the lifecycle of products and materials as long as possible and exploring options to utilize the waste as a valuable resource in the manufacturing of other products (De Souza et al., 2020; Sehnem et al., 2019a; Uvarova et al., 2019a, Kircher et al., 2017; EC, 2015). Also, the reduction of consumption of dwelling natural resources and replacing the chemical substances with environmentally friendly materials have dominated the researches in this area (EC, 2019; UN, 2019; Lahti et al., 2018; Adams et al., 2017; EMF, 2012; Daly, 1991; Boulding, 1966).

The above propositions regarding the CE lead to a debate about the circular business models (CBM) on how to integrate the CE principles on the enterprise or micro-business level. This has become increasingly complex question, as many of the world's major industries try to shape their services and products towards the CE. Although CBMs have been actively discussed over the past five years, there are still relatively small number of practical and scientific studies in this domain (Scarpellini et al., 2020; Avila-Gutierrez et al., 2020).

The idea of the CBM owns its origins to the "Porter's hypothesis" formulated in 1990s, as well as to the development of ecodesign, environmental responsible production and total quality environmental management concepts (Porter, 1991; Hall, 1993; Porter&Linde, 1995; McAlloone& Evans, 1996; Mizuki et al, 1996; Melnyk et al., 2001). The "Porter's Hypothesis" assumes that implementing green solutions in companies can boost productivity, innovation and competitiveness (Porter, 2011; Porter & Linde, 1995; Jirgens & Atstaja, 2017), which is still relevant in the context of CBM. Other researchers advocated the importance examining the company waste disposal costs against the possible revenue from the recycled or reused parts (Mizuki et al., 1996). Notably, this is an important foundation for recycling based CBMs. In 2001, researchers (Melnyk et al., 2001) revealed that companies usually understand "environment reasonable manufacturing" as recycling or material substitution, however detailed investigation of the performance of these companies showed that they also apply such principles as redesign, rebuilding, remanufacturing and reuse. Nowadays these principles are actively described as "3R – reuse, reduce, recycle" and more "Rs" principles in CBMs (Uvarova et al., 2019a; Liu et al., 2017; Benton et al., 2015).

During this period of time, research has explored environmental protection as an element of corporate strategy and its impact on business performance, profit capturing, market value, risk management, recognition and assessment by investors, and other benefits. Also, previous researches reveal that in spite of the benefits from integrating environmental aspects into a policy or a strategy, there were insufficient interest by entrepreneurs to integrate environmental aspects into business (Funk, 2003; Lo & Sheu, 2007). Today, the debate on CBM, its implementation opportunities and its impact on business performance is on the agenda of scientists and practitioners (Sehnem et al., 2019b Uvarova et al., 2019a, Blomsma et al., 2019; Hofmann, 2019; Atstaja et al., 2017). Now CBM can be considered as a subcategory of the discussion topics about sustainable business models and business model innovations (Uvarova et al., 2019a; Hofmann, 2019), highlighting an importance of CBMs in scientific disciplines of a business management, and not just in environment economics comparing to the past.

Summarising, CBM can be defined as business models that incorporate the principles of the CE thus contributing to the business restructuring towards sustainability and through that ensuring new opportunities for a growth of productivity, efficiency and competitiveness of the company.

## 2. Financial performance of the tyre recycling companies

According to the available data, there are 8 companies in Latvia that have acquired the permit of the State Environmental Service for the tyre recycling with the operating capacity more than 500 tonnes per year (Table 1). It should be mentioned that there are other companies with comparatively smaller operating capacity (less than 200 tonnes per year), they are not included in the analyses as does not significantly contribute to this industry.

Table 1

**The overview of tyre recycling companies**

Company	Capacity, t/per year	Description
<b>1. SCHWENK LATVIJA Ltd. (previously CEMEX Ltd)</b>	Max: 11 000 Actual used: 7500	SCHWENK LATVIJA is the cement manufacturer, which uses the EOL tyres as an alternative material for heating. As other manufacturing sectors are prevailing within SCHWENK LATVIJA, it is considered as the consumer of EOL tyres and not a recycling company. Therefore, it is not included in the financial analyses. Though this company is discarding the largest share of tyres thus seen as an important in the whole tyre waste management sector.
<b>2. ECO Baltia vide Ltd.</b>	Max: 8000	This is the only company ensuring waste management and collection, and tyre recycling. This company is not included in the financial analyses as the EOL tyre recycling plant was set-up and launched on August 2019.
<b>3. ECO STOCK Ltd.</b>	Max: 730 Actual: info not available	This company has received the permit to use EOL tyres for the production of a pyrolysis oil. However, the annual financial reports reveal that this company is not operational as it has not demonstrated the revenues in the financial accounts till 2018. Thus, this company is not included in the financial analyses.
<b>4. AK LRPMK Ltd.</b>	Max: 1643 Actual: info not available	This company recycle the EOL tyre using the pyrolysis technology for producing a pyrolysis oil. Although this company has received the permit for the tyre recycling since 2015, the annual financial reports reveal that it is operational since 2017 when demonstrates actual revenues in the financial accounts.
<b>5. E-DAUGAVA Ltd.</b>	Max: 4500 Actual used: 1000	This company uses both the mechanical tyre recycling process and the pyrolysis technology for production of a pyrolysis oil from the EOL tyres. This company combines two tyre recycling business models within one portfolio.
<b>6. MAKROL Ltd.</b>	Max: 1380, Recycled: 600; Vulcanised:780	This restores the largest part of EOL tyres with the vulcanisation process. The smaller part of tyres is mechanically processed into the rubber chips.
<b>7. VVV RECYCLING Ltd.</b>	Max: 6000 Actual used: 1500	This company as the result of the EOL tyre recycling produces the rubber granules and sells them to company which manufactures rubber coverings. This company has introduced the circular business model innovation (CBMI) within the industry by offering new value proposition with an innovative high value-added product for the new customer segment.
<b>8. R-TECHNOLOGY Ltd.</b>	Max: 6000 Actual used: 1000	This company is included in the financial analyses just on 2017 and 2018 as the ensure tyre recycling since summer 2018. Both (2017; 2018) years, included in the analyses in order to provide a comparison of the situation before and after the launch of tyre recycling. This company produces the rubber for sports and playground coverings, which as well can be considered as the CBMI with a new value proposition to new various customer segments.

**Source: created by authors based on the information of SES (2019a) and MoEPRD (2019)**

According to MoEPRD (2018), not all companies, that has received the permit, are actually operating in the tyre recycling. Also, the research confirms the company ECO STOCK Ltd. does not have revenues and it is not operating in the period of the analyses.

This research shows an important development transition in the industry in the last 3 years, when 3 out of 8 companies have launched the tyre recycling production with new modern technologies.

This is partly facilitated by the public support provided for the development and introduction of the green manufacturing technologies.

As described above in the table, five tyre recycling companies were selected for the financial analysis. The period of the financial analyses is from 2013, when most of the companies have started their operations in tire recycling, till 2018 with last approved annual financial reports available. Some of companies have launched the tyre recycling in last 3 years, but as being important in the sector they are included in the financial analyses.

The level of the profitability characterises the ability of an enterprise to generate the financial return from the business and the effectiveness of the use of assets and invested equity (Lesakova, 2007). The net profitability ratios show that in general the tyre recycling companies run inefficient business models with large operating costs ensuring comparatively low return in profit. When excluding VVV Recycling with the extremely marginal value of ratio, the average net profitability shows improvements in last 2 years reaching positive value in 2018 (Table 2).

Table 2

**Net profitability of tyre recycling companies in Latvia**

Company	2013	2014	2015	2016	2017	2018	Trend line
AK LRPMK					12%	14%	
E-DAUGAVA	-4%	-0,4%	22%	-9%	13%	24%	
MAKROL	6%	7%	-55%	-72%	-50%	-13%	
VVV RECYCLING	-2803%	n/a*	-5620%	-334%	-211%	-55%	
R-TECHNOLOGY					0,07%	11%	
<b>Average</b>	-934%	3%	-1884%	-138%	-47%	-4%	
<b>Average excl. VVV Recycling</b>	<b>1%</b>	<b>3%</b>	<b>-17%</b>	<b>-40%</b>	<b>-6%</b>	<b>9%</b>	

\* This ratio can not be calculated as the turnover constitute 0

Source: author's calculations based on Lursoft, 2019

It can be concluded, that in general, the tyre recycling companies operate with losses. Yet the situation is improving in last two years, when 3 out of 5 companies have performed with positive profit. This can be related with investments, including the public support, in new technologies which improves the efficiency and performance. Also, companies – VVV Recycling and R-technologies have introduced innovative circular business models to manufacture products with higher added value which allows the widening of customer segments and increasing sales with the new value proposition of innovative products.

The return on assets (ROA) ratio is used to analyse, how successfully a company can use its assets for generating the revenues and also shows the companies' position or competitiveness level against the competitors (Jewell & Mankin, 2011; Selling & Stickney, 1998).

Table 3

**Return on Assets (ROA) of tyre recycling companies in Latvia**

Company	2013	2014	2015	2016	2017	2018	Trend line
AK LRPMK					21%	26%	
E-DAUGAVA	-3%	-0,32%	16%	-5%	11%	16%	
MAKROL	3%	3%	-12%	-11%	-11%	-8%	
VVV RECYCLING	-10%	-2%	-4%	-5%	-12%	-16%	
R-TECHNOLOGY					0,01%	10%	
<b>Average</b>	-3%	0,23%	-0,30%	-7%	2%	6%	

Source: author's calculations based on Lursoft, 2019

Companies with the higher ROA (Table 3) run traditional business models, for instance, producing a pyrolysis oil or mechanically redeploying EOL tyres in rubber chips as the material for heating. The financial analyses show that most of the business models are not efficient having the negative or low profitability. Relatively large operating or production costs causes the negative net profit and, in some companies, even the gross profit.

The financial analyses of each company provide some conclusions regarding each of tyre recycling companies and the financial viability of the business model applied. AK LRPMK has become operational just in last 2 years of analyses. Since then this company still demonstrates comparatively small amount of the cash that may negatively affect the cash flow. This company shall increase the revenues and cash. The diversification of the tyre recycling technologies and introduction of additional products instead of just manufacturing the pyrolysis oil shall improve the financial viability of AK LRPMK. Although the ROA is high, this is due to the relatively small amount of assets. Also, the lack of long-term assets and comparatively large amount of short-term liabilities may affect the credit capacity and ability of attract external funding for adopting new investment intensive technologies.

The net profitability and other financial ratios of E-DAUGAVA are improving noticeably in last two years. Yet, the negative gross profit causes concerns. The portfolio of two well performing circular business models puts this company as the leading within this industry ensuring the largest amount of the turnover, net profit, long-term assets, equity and highest profitability ratios. Yet, this company should consider CBMI and new products, especially assuming the competition by new growing competitors, like R-TECHNOLOGY, and increasing environmental requirements towards the pyrolysis technologies.

The financial analyses of MAKROL reflects the financial viability problems of a business model applied, in particular, the low amount of a cash, the negative net profit and profitability ratios. As the consequences, the operation has been partly restricted for this company since the beginning of 2019 till the recovery of the financial capacity of this company (SES, 2019b). In 2018, the financial situation is stabilising, but still is negative. From the CE perspective the tyre restoration is positive as it extends the lifetime of the EOL tyres, but it appears not efficient with low profitability ratios and require manufacturing of innovative products.

Regarding VVV RECYCLING despite the losses, there is relatively sufficient amount of the cash. During all years of the analyses, the negative net and gross profit does not sound for the financially viable business model. The comparatively remarkable growth of the turnover in 2018 improves the profitability situation of this company, but still it is possessing a threat for restrictions in further operation. This leads to the conclusion that production of just one innovative product does not ensure a sufficient level of the profitability. The specifics of the tyre recycling require the adoption of additional new business models that would complement the existing business model.

R-TECHNOLOGY is new, but promising company in terms of the financial viability. From one hand two years are too short period for the assessment, but still this company demonstrates stunning increase of the turnover, the net and growth profit, and increasing profitability ratios. As this company has introduced innovations within the tyre recycling, it should have strong competitive advantage in forthcoming years. This company has adopted one new circular business models, but the success lies in the manufacturing of various innovative products for different customer segments.

## Conclusions, proposals, recommendations

- 1) This research confirms the hypothesis that new circular business models improve the financial viability of the tyre recycling companies, and for that the development of new innovative products is important.
- 2) The contemporary discussions of researchers and policy makers proves the high importance of this topic not just on the macro, but as well on the micro (business management) level.
- 3) The tyre recycling companies in Latvia run traditional business models with the low profitability, but companies having several business models combined within one portfolio or introducing CBMI with different innovative products for various customer segments demonstrate better financial results.
- 4) Further investigation is needed to analyse new perspectives of the development of the CBMs, identifying new products and industries relevant for the industrial symbioses with the EOL tyre recycling products.
- 5) Further research is necessary about the feasibility and viability of new tyre recycling circular business models that ensure higher profitability ratios for the businesses and encourage the industry for revolutionary re-generation.

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## Bibliography

1. Adams, K., Osmani, M., Thorpe, T., & Thornback, J. (2017). Circular Economy in Construction: Current Awareness, Challenges and Enablers. Proceedings of the Institution of Civil Engineers - Waste and Resource Management, 170 (1), p.15-24.
2. Atstaja, D., Susniene, R., Startiene, G., & Gabrevics, L. (2017). Evolution from Eco-Friendly Solutions Implementation in an Enterprise. *Economic Science for Rural Development Conference Proceedings, No. 44*.
3. Avila-Gutierrez, M. J., Martin-Gomez, A., Aguayo-Gonzalez, F., & Lama-Ruiz, J. R. (2020). Eco-Holonic 4.0 Circular Business Model to Conceptualize Sustainable Value Chain Towards Digital Transition. *Sustainability*, 12(5), p.1-32.
4. Benton, D., Hazell, J., & Hill, J. (2015). The Guide to the Circular Economy: Capturing Value and Managing Material Risk. Do Sustainability. Oxford, UK.
5. Boulding, K. (1966). The Economics of the Coming Spaceship Earth. In H. Jarrett (ed.). Environmental Quality in a Growing Economy, Baltimore, MD: Resources for the Future/Johns Hopkins University Press. New York, USA, p. 3-14.
6. De Souza, F. F., Ferreira, M. B., Saraceni, A. V., Betim, L. M., Pereira, T. L., Petter, R. R. H., Pagani, R.N., De Resende, L.M.M., Pontes, J., & Piekarski, C. M. (2020). Temporal Comparative Analysis of Industrial Symbiosis and Opportunities of Circular Economy in a Business Network. *Sustainability*, 12(5), p. 1-18.
7. Ellen MacArthur Foundation (EMF), (2012). Towards the Circular Economy: Economic and Business Rationale for an Accelerated Transition (No. vol. 1). Ellen MacArthur Foundation.
8. European Commission (EC), (2015). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Passing the loop – An EU action plan for the circular economy. Brussels, 2.12.2015.
9. EC (2019). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. Brussels, 11.12.2019.
10. Funk, K. (2003). Sustainability and Performance. MIT Sloan Management Review, 44(2), pp. 65 - 70.
11. Hall R. (1993). The Soul of the Enterprise: Creating A Dynamic Vision for American Manufacturing. New York, NY: Harper Business

12. Hofmann, F. (2019). Circular Business Models: Business Approach as Driver or Obstrucater of Sustainability Transitions? *Journal of Cleaner Production*, 224, pp. 361-374.
13. Jewell, J. J., & Mankin, J. A. (2011). What is Your ROA? An Investigation of the Many Formulas for Calculating Return on Assets. *Academy of Educational Leadership Journal*, 15, pp. 79-91.
14. Jirgens, M., & Atstaja, D. (2017). Development of Environmental Regulations and Benefits on Enterprises. *Economic Science for Rural Development Conference Proceedings (No. 44)*, p. 248-255.
15. Kirchherr, J., Reike, D. & Hekkert M. (2017). Conceptualizing the Circular Economy: An Analysis of 114 Definitions. *Resources, Conservation and Recycling*, 127, pp. 221-232.
16. Lahti, T., Wincent, J., & Parida, V. (2018). A Definition and Theoretical Review of the Circular Economy, Value Creation, and Sustainable Business Models: Where Are We and Now Where Should Research Move in the Future? *Sustainability*, 10(8), p. 2-19.
17. Lesakova, L. (2007). Uses and Limitations of Profitability Ratio Analysis in Managerial Practice. In *International Conference on Management, Enterprise and Benchmarking*, pp. 1-2.
18. Liu, L., Liang, Y., Song, Q., & Li, J. (2017). A Review of Waste Prevention Through 3R Under the Concept of Circular Economy in China. *Journal of Material Cycles and Waste Management*, 19(4), pp. 1314-1323.
19. Lo, S. F., & Sheu, H. J. (2007). Is Corporate Sustainability a Value-Increasing Strategy for Business? *Corporate Governance: An International Review*, 15(2), pp. 345-358.
20. Lursoft (2019). Annual financial reports, retrieved from: [www.lursoft.lv](http://www.lursoft.lv), accessed: 01.12.2019.
21. McAlloone, T. C. & Evans S. (1996). Integrating Environmental Decisions into the Design Process. In 3rd International Seminar On Life Cycle Engineering. CIRP, Verlag Industrielle Organisation, ,96, pp. 83-90.
22. Melnyk S.A., Handfield R.B. & Catalogne R.J. (2001). Integrating Environmental Concerns into the Design Process: The Gap between Theory and Practice. *IEEE Transactions on Engineering Management* 48(2), pp. 189 – 208.
23. Mizuki, C., Sandborn, P. A., & Pitts, G. (1996, May). Design for Environment-a Survey of Current Practices and Tools. *Proceedings of the 1996 IEEE International Symposium on Electronics and the Environment. ISEE-1996*, pp. 1-6.
24. Mont, O. K. (2002). Clarifying the Concept of Product-Service System. *Journal of Cleaner Production*, 10(3), pp. 237-245.
25. MoEPRD (Ministry of Environmental Protection and Regional Development of Latvia), (2019). Public information, retrieved from: [www.varam.gov.lv](http://www.varam.gov.lv). Access: 11.12.2019.
26. MoEPRD (2018). Informativais zinojums par nolietoto riepju apsaimniekosanu, retrieved from: <http://tap.mk.gov.lv/mk/tap/?pid=40449470>. Access: 11.02.2020.
27. Porter M.E. (1991). America's Green Strategy, *Scientific American*, p. 168.
28. Porter, M.E., & Van der Linde, C. (1995b). Toward a New Conception of Environment-Competitiveness Relationship, *Journal of Economic Perspectives*, 9(4), pp. 97-118.
29. Saleem, Q., & Rehman, R. U. (2011). Impacts of Liquidity Ratios on Profitability. *Interdisciplinary Journal of Research in Business*, 1(7), p.95-98.
30. Sehnem, S., Vazquez-Brust, D., Pereira, S. C. F., & Campos, L. M. (2019a). Circular Economy: Benefits, Impacts and Overlapping. *Supply Chain Management Vol. 24 No. 6*, pp. 784-804.
31. Sehnem, S., Campos, L. M., Julkovski, D. J., & Cazella, C. F. (2019b). Circular business models: level of maturity. *Management Decision Vol. 57 No. 4*, pp. 1043-1066.
32. Selling, T. I., & Stickney, C. P. (1989). The Effects of Business Environment and Strategy on a Firm's Rate of Return on Assets. *Financial Analysts Journal*, 45(1), pp. 43-52.
33. SES (State Environmental Service of Republic of Latvia), (2019a). Public information, retrieved from: [www.vvd.gov.lv](http://www.vvd.gov.lv). Access: 03.12.2019.
34. SES (2019b). Permit for Category B Polluting Activity No.LI16IB0005 (MAKROL ltd.), retrieved from: [http://www.vvd.gov.lv/izsniegtas-atlaujas-un-licences/a-un-b-atlaujas/?company\\_name=makrol&pollution\\_category=&pollution\\_id=&org\\_id=&CLS\\_Garbage\\_ID=&CLS\\_Garbage\\_ID\\_autocomplete=&perm\\_date\\_from=&perm\\_date\\_to=&valid\\_date\\_from=&valid\\_date\\_to=&s=1](http://www.vvd.gov.lv/izsniegtas-atlaujas-un-licences/a-un-b-atlaujas/?company_name=makrol&pollution_category=&pollution_id=&org_id=&CLS_Garbage_ID=&CLS_Garbage_ID_autocomplete=&perm_date_from=&perm_date_to=&valid_date_from=&valid_date_to=&s=1), access:11.12.2019.
35. Scarpellini, S., Marin-Vinuesa, L. M., Aranda-Uson, A., & Portillo-Tarragona, P. (2020). Dynamic Capabilities and Environmental Accounting for the Circular Economy in Businesses. *Sustainability Accounting, Management and Policy Journal*.
36. United Nations (UN) (2019), The Sustainable Development Goals Report 2019. United Nations, retrieved from: <https://unstats.un.org/sdgs/report/2019/>
37. Uvarova, I., Atstaja, Dz. & Korpa, V. (2019a). Challenges of the Introduction of Circular Business Models Within Rural SMEs of EU, *International Journal of Economic Sciences VOL IX / No. 2* (accepted)
38. Uvarova, I., Atstaja, D., & Vitola, A. (2019b). Circular Economy Driven Innovations Within Business Models of Rural SMEs. *Proceedings of the International Scientific Conference "Society.Integration.Education"*. Volume VI, pp. 520 - 530.

## **MONITORING OF LAND USE AND LAND ABANDONMENT AT THE MUNICIPAL LEVEL: EXAMPLE OF SAMARA REGION**

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**Abstract.** The article discusses modern legal regulation of land monitoring and necessary changes in appropriate legislation. Land monitoring is divided into monitoring of land use and monitoring of land quality. The problem of land abandonment or non-use of land resources on the example of Samara region, where more than 75 % of territory is agricultural land has been studied. Inverse relationship between remoteness of local municipality from centre of the Samara-Togliatti agglomeration and area of unfarmed agricultural land has been analysed. Since the start of land reform, large areas of abandoned land have appeared in Samara region. The information on unfarmed agricultural land on municipal level of Samara region has been presented and the changes in their quality conditions are characterized. At federal level the program for prevention and elimination of land abandonment has been developed and implemented, the results of this program have been analysed.

However, there are significant problems in monitoring of land conditions. It is proved that absence of single authority for land management on national level and fragmentation of this function across different federal ministries leads to uncoordinated actions and lack of reliable information about land quality. As result, land quality continues to deteriorate, degradation processes are going on. At municipal level there are no possibilities and necessary investigation materials for land management and monitoring. The following measures are proposed as main recommendations for solving land use and land abandonment problems: creation of single authority for land stock management, implementation of comprehensive inventory of land on municipal level, improvement of cadastral valuation system according updated materials and technologies, as well as certification of agricultural land for soil quality and properties.

The purpose of the research was the study of results of land monitoring in Samara region for analysis of dynamics of land stock and identification of main reasons for formation of unused (abandoned) agricultural land in the region. It is proved that land stock of Samara region mainly consists of agricultural lands, and most part of them (60 %) are owned by citizens. Significant problem of land use is the availability of unused arable land, which is 8 % on average in the region, but in local municipalities it ranges from 0 % to 29 %. The highest proportion of unused arable land is located in areas closer to Samara-Togliatti agglomeration, where most of the land has been privatised by individuals for conversion to other land categories and further resale, as well as problems with uncontrolled urbanization there have been observed.

**Key words:** agricultural land, land abandonment, land monitoring, land stock, soil

**JEL code:** Q15; Q24

### **Introduction**

The state of agro landscapes, which are agricultural production basis, largely determines the economic development of the country. Agro landscapes exist in human-defined regimes, so their condition depends on the quality of management to maintain the set of parameters. The equilibrium state of agro landscapes should be supported by systems of agronomic, reclamation and ecological measures. In case of non-observance of farming technologies, the balance of substance and energy is disturbed and soil fertility is degraded, productivity of agro landscapes is reduced (Trofimova, L. S.; Trofimov, I. A.; Yakovleva, E. P., 2018). To assess the activity of degradation processes, the quality of land and its use, state monitoring of land is carried out.

The article studies land monitoring system in Russian Federation. By example of one of the regions of the country the indicators of land stock state in different municipalities and the changes that have taken place within 30 years since the land reform beginning have been studied. Due to lack of single land management authority in Russia and fragmentation of this function by different ministries,

reliable information on the state of land cannot be obtained. As a result, the state of land continues to deteriorate, as there are processes of degradation and there are no measures to prevent and eliminate them.

The hypothesis of the study is - the basis of current problems of land use in the studied region is the lack of single land management authority and fragmentation of supervision function between different agencies.

The purpose of the study is to investigate the results of land monitoring in Samara region in order to analyse the dynamics of land stock and identify main reasons for formation of unused agricultural land.

The objectives of research are - organization of land monitoring system in the Russian Federation and its federal regions, dynamics of the land categories of Samara region land stock in period 2007 - 2018, land ownership forms, distribution of unused land in municipal regions and reasons for increase of area of unused agricultural land closer to urban agglomerations.

The method of analysis of scientific literature, annual statistical data reports, tabular and graphical methods conducting the investigation were used.

## **Research results and discussion**

State land monitoring is an organized system for monitoring the condition, qualitative and quantitative characteristics, use of land, and changes in soil fertility, as well as assessment and forecasting of changes. Depending on the purpose of monitoring, it is divided into monitoring of land use and monitoring of land conditions. Monitoring of use is carried out to track the use of land plots for their intended purpose. State monitoring of land belongs to ecological monitoring and is carried out (except for agricultural land) by Federal Service for State Registration, Cadastre and Cartography (*Rosreestr*) with application of certain criteria. Such criteria in monitoring of land use include: total area of land of certain category; area of land with certain type of intended use; area of land not used for their intended purpose, not used or with violations of land legislation identified; distribution of land according form of ownership; area of developed land; area of forest stock registered into the state real estate cadastre etc. (State (national) report..., 2018). Land monitoring data are periodically published in the form of national report on the state and use of land in the Russian Federation, as well as regional reports for each subject of the Russian Federation (Report on the state and use of lands in Samara region, 2019). Monitoring of agricultural land condition and use is the responsibility of Ministry of Agriculture of the Russian Federation, and results of this monitoring are also periodically published in the open press (Report on the state and use of land in Samara region, 2019; Report on the state and use of agricultural land in Russian Federation, 2018).

Large areas of abandoned land need to be involved in economic activities or used to increase forest cover, which is done in many countries. Promoting afforestation is often mentioned as strategy to combat global climate changes (Bala, G. and others, 2007; Noszczyk, T. 2018; Clavero, M., Villero, D., Brotons, L., 2011; Gibbard, S. and others, 2005).

The territory of Samara Region is located in the south-east of the East-European Plain in the Middle Volga Region on the border of steppe and forest-steppe natural zones. Black soils prevail in the soil cover: black soils leached (21.8 %), typical (24.9 %), ordinary (19.1 %) and southern (30.6 %). Other soils have small areas: dark grey forest soils (1.2 %), black soils (1.1 %), floodplain meadow soils (0.6 %), saline soils (0.4 %), dark chestnut soils (0.04 %) etc. (Voronin, V. V., Vlasov, A. G., Vasilieva, D. I., 2013).

Most of the region's territory is formed by agricultural landscapes. The study of dynamics of main indicators of agricultural land state and soil fertility shows that Samara region is characterized by decrease in the quality parameters of agro landscapes. The last soil survey in Samara Region was conducted in 2003-2004. It showed that more than half of total area of agricultural land (51 %) is erosively dangerous and most of it is eroded to different degrees. An analysis of materials from the "Samarskaya" agrochemical service station showed that, since 1992, the balance of nutrients in arable soils in Samara oblast has become negative (Obushchenko, S. V., 2014). Extraction of nutrients from crop has become much more prevalent than the return of nutrients to the soil (Gnidenko V. V., Obushchenko, S. V., 2013).

### 1. Organization and results of monitoring of land stock of Samara region

The agricultural land category prevails on the territory of the region, which occupies 75.9 % of the territory, while the share of other categories is as follows: forest stock – 10.3 %; land of settlements – 6.7 %; water stock – 3.1 %; specially protected territories – 2.6 %; industry, transport and other special purpose – 1.3 %; land reserve – 0.01 % (Report on the state and use of lands in Samara region, 2019).

Department of Federal Service for State Registration, Cadastre and Cartography of Samara Region (*Rosreestr*) is responsible for state monitoring of land of all categories, except category of agricultural land in the Samara Region. Monitoring of agricultural land is carried out by Ministry of Agriculture and Food of Samara Region. The results of annual monitoring of land in Samara region according land categories conducted by *Rosreestr* are given in the table 1.

Table 1

**Dynamics of Samara Region land stock\***

No	Land category	Area, thousand ha					
		2007	2010	2013	2015	2017	2018
1.	Agricultural land	4112.5	4089.4	4070.1	4067.4	4067.2	4067.2
2.	Land of settlements, including	344.4	356.2	359.3	359.6	359.8	359.8
	- urban settlements	168.5	170.8	170.8	170.8	170.8	170.8
	- rural communities	175.9	185.4	188.5	188.8	189.0	189.0
3.	Land of industry, transport and other special purposes	69.6	70.0	71.0	71.5	71.5	71.5
4.	Specially protected areas	135.3	138.8	138.8	138.8	138.8	138.8
5.	Forest land	527.0	534.4	549.6	551.5	551.5	551.5
6.	Land under water	167.4	167.4	167.4	167.4	167.4	167.4
7.	Reserve land	0.3	0.3	0.3	0.3	0.3	0.3
<b>Total within administrative boundaries of Samara Region</b>		<b>5356.5</b>					

*Source: compiled by authors according to the reports on state and use of land in the Samara region 2007-2018 (Report on the state and use of lands in Samara region, 2019)*

Analysis of presented data allows authors to make the conclusion that there is gradual decrease of land of agricultural category, 45.3 thousand hectares decreased from 2007 to 2018. At the same time, the area of residential lands category increased by 15.4 thousand ha, industrial and other special purpose land - by 1.9 thousand ha, land of specially protected territories and objects - by 3.5 thousand ha, and land of forest stock – by 24.5 thousand ha. The area of land under water and reserve land has remained unchanged since 2007. Thus, the main losses of agricultural land are related to urbanization mainly within boundaries of Samara-Togliatti agglomeration, as well as to settling of the long-used arable land and transfer of such land to forest stock category

(Kondolskaya, A., Vasilieva, D., Parsova, V., Antropov, D., 2019). The problem of preserving agricultural and forest land for sustainable development of society is very acute in many countries (Kurowska, K., Kryszk, H., 2016; Louwagie G., Gay S. H., Sammeth F., Ratering T., 2011; Zuazo, V. H. D. and others, 2011).

## 2. Land use monitoring in Samara region

The results of Samara region land use monitoring as of 01.01.2019 are presented in the table 2. It has been already mentioned that in Samara region agricultural land prevails (over 75 %) in the general structure of the land fund, therefore a lot of attention should be paid to monitoring of this land.

Presented data analysis shows that privatized land in agricultural category in Samara region to the greatest extent (more than 68 %) is owned by private and legal persons, while the rest land is ownership of state and municipalities. Therefore, an important issue is an improvement of complex of administrative and control measures for monitoring and management of agricultural land. Great attention should be paid to monitoring of land use according its intended purpose, especially those which are owned by agricultural enterprises. It is necessary to continue taking measures to involve unused lands in circulation.

Table 2

**Breakdown of land stock by types of ownership in Samara region\***

No	Land category	Total area	Owned by citizens	Owned by legal entities.	State and municipal property	including		
						owned by national level authority	owned by regional level authority	municipal property
1.	Agricultural land	4067.2	2459.6	296.7	1310.9	113.2	0	0
2.	Lands of settlements	359.8	70.3	20.1	269.4	23.6	7.3	9.1
3.	Lands of industry, transport and other special purposes	71.5	0.7	1.6	52.6	40.7	11.3	0.6
4.	Specially protected areas	138.8	0	0	138.8	105,7	0	0
5.	Forest land	551.5	0	0	551.5	326.1	0	0
6.	Water stock	167.4	0	0	167.4	0.8	0	0
7.	Reserve land	0.3	0	0	0.3	0	0	0
<b>Total:</b>		<b>5356.5</b>	<b>2530.6</b>	<b>319.3</b>	<b>2658.3</b>	<b>610.1</b>	<b>18.6</b>	<b>9.7</b>

*Source: compiled by authors according to the data of Reports on the condition and use of lands of Samara region 2007-2018 (Report on the state and use of lands in Samara region, 2019)*

The results of land state monitoring of Samara region on 01.01.2019 are shown in the figure 1.

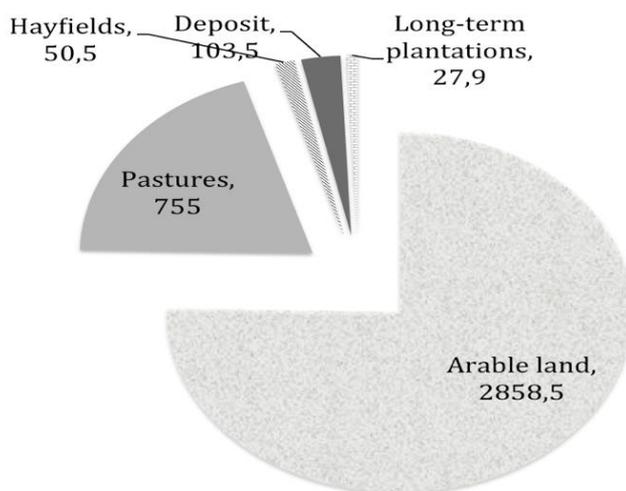


Fig. 1. **Breakdown of agricultural land in Samara region, thousand ha**

Analysing breakdown of agricultural land, it can be seen that arable land prevails, occupying 70 % of total area of agricultural land. The share of pastures is 18 % of in this category, the share of fallows - 2.5 %, meadows - 1.2 %, and perennial plantations - 0.7 %. The results of monitoring of agricultural land are presented in the table 3.

Table 3

**Samara Region land fund dynamics\***

No	Type of land use	Area, thousand ha		
		2016	2019	Changes 2016/2019
1.	Arable land	2859.9	2858.5	-1.4
2.	Perennial plantations	27.8	27.9	+0.1
3.	Meadows and pastures	805.5	805.5	0
4.	Bushes	90.1	90.1	0
5.	Forest land	21.3	21.3	0
6.	Land under construction	16.2	16.2	0
7.	Land under roads, communications, streets, squares	41.7	41.7	0
8.	Land under water	36.0	36.0	0
9.	Swamps	34.6	34.6	0
10.	Disturbed land	0.5	0.5	0
11.	Deposits	103.5	103.5	0
12.	Other	26.5	26.5	0

**Source: compiled by authors according to the Reports on the state and use of land in the Samara region 2007-2018 (Report on the state and use of lands in Samara region, 2019)**

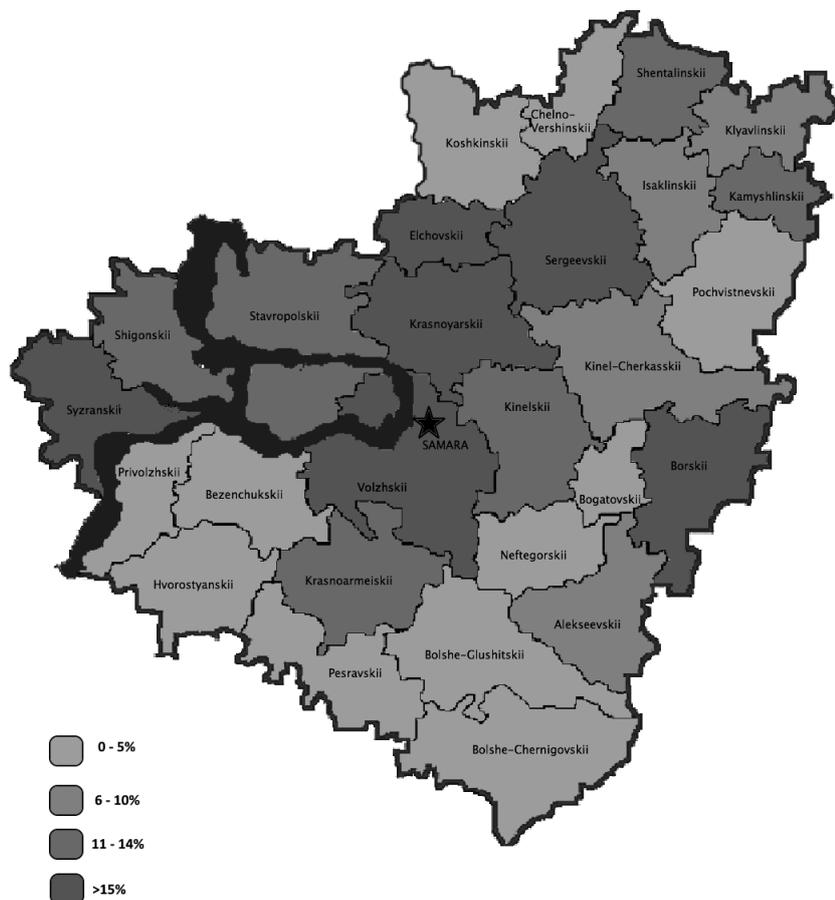
There were no changes in land areas in 2019 compared to the previous years. Analysis of the dynamics for last three years showed decrease of arable land area by 1.4 thousand hectares and increase of perennial plantings area by 0.1 thousand hectares.

In order to monitor and assess the conditions and efficiency of agricultural land use in municipal districts of Samara region, the Commission at Ministry of Agriculture and Food of Samara region has been established. The tasks of this commission are to inspect the objects in accordance with the criteria of efficiency assessment, summarize the assessment and make rating of municipal areas of Samara region. For evaluation, the following criteria have been developed:

- share of cultivated arable land (%);
- visually assessed condition of fallow land;

- general management standard - visually assessed condition of crops, presence of weeds, condition of field roads;
- phytosanitary conditions of areas adjacent to production facilities of agro industrial complex;
- carrying out of measures aimed at combating quarantine objects - weeds;
- increase or decrease of areas infested with quarantine weeds;
- improvement of agricultural production facilities;
- conditions of protective forest belts;
- maintenance of territories adjacent to roads of local, regional and federal significance;
- conditions of areas around poles, power lines, gas pipelines etc.

Use and condition of agricultural land in Samara region is the most important factor both in ensuring food security and creating of ecological balance of territory. Information on unused agricultural land in municipal districts of Samara Region on 01.01.2019 is given in figure 2.



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Fig. 2. Location of unused land in municipal areas of Samara region, %

On average 8 % of agricultural land is not used in the region. However, this indicator varies greatly from municipality to municipality. In some municipalities (Bogatovsky, Bolsheglushitsky, Bolshechershnigovsky, Koshkinsky, Neftegorsky, Pestravsky, Hovorostyansky and Pokhvistnevsky) this indicator is equal or close to zero. But in some municipalities it is significantly above the regional average: Elkhovskiy – 29 %, Sergievskiy – 22 %, Borskiy – 20 %, Syzranskiy – 18 %, Volzhskiy – 18 %, Krasnoyarskiy – 15 % etc. The majority of municipalities located far from regional centre have small proportion of unused arable land. In peri-urban areas, on the contrary, this indicator is higher, as agricultural land is often purchased by individuals in order to be transferred to another category.

It should be noted that total area of unused arable land in Samara region has decreased in recent years: in 2007 about 700 thousand ha (24 %) of arable land was not used, in 2011 this indicator was reduced to 417 thousand ha (15 %). Measures taken by the Ministry of Agriculture and Food to engage in the turnover of unused arable land have led to reduction of unused land area. Road maps have been developed for some municipal districts to organize and conduct an inventory of agricultural land in order to identify arable land that is not used for agricultural production and is not used for its intended purpose.

Monitoring of land use is an important part of the land management system. Modern problems in the field of state land management lead to violations of land laws, such as:

- unauthorized land seizure;
- occupation of valuable agricultural land and land of environmental importance;
- use of land not for its intended purpose and in contradiction with the permitted use;
- consumer use of land, which leads to depletion of soil fertility or loss of the soil layer etc.

### **Conclusions, proposals, recommendations**

Improving the land management system, it is required to address land management problems. Unreasonable and thoughtless change of legislation in the sphere of land management, simplification and rejection of land management activities can lead to irreparable damage.

Process of further improvement of land management monitoring is currently under way. Plan of measures to improve legal regulation of land relations has been approved by Government of the Russian Federation in 2018. Adoption of number of federal laws under this Plan will facilitate solving of problems in use of land resources and increase the responsibility of legal persons and individuals working on land. There should be implemented protection of agricultural land and reduction of withdrawal of land from agricultural turnover. In author's opinion most important directions for improving the land legislation of the Russian Federation are as follows:

- establishment of criteria for attributing land to especially valuable agricultural land and its allocation to separate territorial zone;
- determination of the procedure for changing of types of permitted use of land;
- establishment of restrictions for changing of types of permitted use of especially valuable agricultural land, as well as ban of open-cast mining of common minerals on agricultural land;
- improvement of the inventory system of the land, especially of agricultural land;
- carrying out of passporting of agricultural land in order to obtain an information on soil conditions and properties, etc.

### **Bibliography**

1. Bala, G., Caldeira, K., Wickett, M., Phillips, T.J., Lobell, D.B., Delire, C., Mirin, A. (2007). Combined Climate and Carbon-cycle Effects of Large-scale Deforestation. *Proceedings of the National Academy of Sciences*, 104(16). pp. 6550-6555.
2. Clavero, M., Villero, D., Brotons, L. (2011). Climate Change or Land Use Dynamics: Do We Know What Climate Change Indicators Indicate?. *PLoS One*, 6(4), e18581. <https://doi.org/10.1371/journal.pone.0018581>
3. Gibbard, S., Caldeira, K., Bala, G., Phillips, T.J., Wickett, M., (2005). Climate Effects of Global Land Cover Change. *Geophysical Research Letters*, 32(23).
4. Gnidenko V.V., Obushchenko S.V. (2013). Dynamics of Soil Fertility Changes in Samara Region. *Proceedings of Modern Natural Science*. №9. pp. 148-151. Noszczyk, T. (2018). Land Use Change Monitoring as a Task of Local Government Administration in Poland. *Journal of Ecological Engineering*. 19. 170-176. 10.12911/22998993/79409.
5. Kondolskaya, A., Vasilieva, D., Parsova, V., Antropov, D. (2019) Problems of Conservation and Use of Agricultural Land in Urban Agglomerations. 18th International Scientific Conference Engineering for rural Development Proceedings, Volume. pp. 774-779.

6. Kurowska, K., Kryszk, H. (2016). Influence of Agricultural and Forest Land Protection on Development of Investment and Construction Process in Poland. International Multidisciplinary Scientific GeoConference: SGEM: Surveying Geology & Mining Ecology Management, 2, pp. 485-492.
7. Louwagie G., Gay S.H., Sammeth F., Ratering T. (2011). The Potential of European Union Policies to Address Soil Degradation in Agriculture. Land Degradation & Development, 25, pp. 5 – 17.
8. Obushchenko, S.V. (2014). Dynamics of the Main Indices of the Soil Fertility in the Samara Region for 50 years (in Russian) // Agrarian and industrial complex science and technology achievements. №1. pp. 14-16.
9. Trofimova, L.S.; Trofimov, I.A.; Yakovleva, E.P. (2018) Agrolandscape Assessment, Challenges of their Monitoring and Management in Russia (in Russian). New methods and results of the landscape research in Europe, Central Asia and Siberia. Monograph. In 5 volumes (in Russian). New methods and results of investigations of landscapes in Europe, Central Asia and Siberia. Under edition of V.G. Sychev, L.Muller. Moscow: Publishing house of D.N. Pryanishnikov All-Russian Research Institute of Agrochemistry. pp. 114-118.
10. State (national) report on the state and use of land in the Russian Federation in 2017. - Moscow: Rosreestr, 2018. p. 197.
11. Report on the State and Use of Agricultural Lands in the Russian Federation in 2016. (2018). Moscow: FSBNU Rosinformagroteh. p. 240.
12. Report on the state and use of lands in Samara region in 2018. (2019) Federal Service for State Registration, Cadastre and Cartography Department for Samara Region. Samara.
13. Vlasov, A.G. Vasilieva, D.I. (2018) Dynamics of the Samara Region Land Fund Condition as a Result of the Land Reform // Innovative approaches to the sustainable development of the social and ecological economic systems. - Proceedings of the fifth International conference. Institute of Volga Basin Ecology of the Russian Academy of Sciences; SSEU. pp. 28-33.
14. Voronin, V.V., Vlasov, A.G., Vasilieva, D.I. (2013) Structure and Quality Estimation of the Samara Region Lands (in Russian) // Problems of regional ecology. №4. pp. 109-116.
15. Zuazo, V.H.D., Pleguezuelo, C.R.R., Flanagan, D., Tejero, I.G., Fernandez, J.L.M. (2011). Sustainable Land Use and Agricultural Soil. In Alternative Farming Systems, Biotechnology, Drought Stress and Ecological Fertilisation. Springer, Dordrecht. pp. 107-192.

## TRENDS IN THE DEVELOPMENT OF AGRICULTURE IN CONDITIONS OF TAX REFORM IN GEORGIA

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**Abstract.** At the current stage of development of the Georgian economy and in conditions of existing resources, only the agriculture sector can contribute to the reduction of high levels of poverty and unemployment in the country. Improper assessment of the role and importance of the sector, lack of programmes based on scientific research, inconsistent reforms led to the low competitiveness of Georgian agricultural production and the prevalence of imported products on the internal market. The aim of this paper is to assess the impact of tax reform on the development of the agriculture sector in Georgia, and to compare it with Latvia, as it has been implemented in both countries based on Estonian experience. It is substantiated by means of theoretical and empirical methods applied in the article, that the land reform, implemented in Georgia before the profit tax reform, as well as financing of certain projects in the sector, was carried out without proper analysis and assessment of expected risks. The research concludes that for the development of agriculture sector of Georgia, it is especially important, at the first stage, to elaborate and implement mechanisms of protection of internal market, develop the existing infrastructure, promote cooperative enterprises, extend tax benefits to all spheres of activities of agricultural cooperatives, commence the process of structural diversification and modernization of the sector, and overcome the obstacles existing on external markets.

**Key words:** development of agriculture, profit tax, corporate income tax, tax reform, Georgia.

**JEL code:** Q14,Q18

### Introduction

The paper examines the situation in the agriculture sector of Georgia for the last 6 years and the tendencies of development in the conditions of tax reform. The importance and relevance of the study lie in the determination of causes behind the unsuccessful implementation of Estonian experience of tax reform in the agriculture sector of Georgia and what we should expect in the conditions of Estonian experience of tax reform. The article presents the following research hypothesis - Without solving the situation existing in the agriculture, the tax reform will not be successful. The aim of this paper is to assess the impact of tax reform on the development of the agriculture sector in Georgia and to compare it with Latvia, as it has been implemented in both countries based on Estonian experience. The tasks of the research are: to study and analyse the existing situation in the agricultural sector of Georgia and elaborate the respective recommendations. The research object is state of agriculture in Georgia and tax policy in agriculture in Georgia.

The methodological basis of the research is the dialectical method of cognition that has enabled us to study the economic events and their interaction. The research methods like scientific abstraction, comparison of information, generalization, analysis and synthesis were also used. The empirical basis of the research is the official information of the National Statistics Office of Georgia, the normative acts of the Government of Georgia, the Georgian Tax Code and scientific publications.

Tax benefits in Georgia do not cover such fields of economic activities of agricultural cooperative as processing and realization of agricultural products; compared to 2015, the number of cooperatives decreased by 965 units (Legal status, 2020); the food self-sufficiency rate is low; import of food products in recent years almost did not decrease (Food Security, 2019); foreign direct investments in the sector are low (Foreign Direct Investments, 2020).

During the last three decades, despite the resources existing in the agriculture sector, elaboration of strategic plan of development, implemented tax reform, association agreement signed between Georgia and EU on 27 June 2014, and introduction of liberal trade regime with various countries, we

got the situation when agriculture sector does not have a developed infrastructure, modern technologies are not implemented, qualification of farmers is low, cooperative enterprises are not developed, and competitive production is not produced. Protection of own internal market is of urgent necessity, in order to allow the sector to be prepared for functioning in a regime of competition. Many countries stick to this approach, including the countries in the European Union. Higher levels of support for EU agricultural producers are accompanied by higher levels of customs protection of the EU market (Pawlak K., 2018). It is also very important for Georgia to support the development of agricultural cooperatives. Agricultural cooperative provides comprehensive services for members, brings benefits to members and distributes proceeds to members. (Zhu Q., Wachenheimb C. J., Ma Z., Zhu C. 2018).

### **Research results and discussion**

The challenges, which were faced by the agriculture sector of Georgia for years, their scope and efforts to overcome them point out the long-time inefficient economic policy adopted in this sphere. Therefore, it is an urgent necessity to speed up the process of structural diversification and modernization of the sector, which would ensure significant growth rates in the agriculture of Georgia and secure achievement of strong positions on the international market.

At this stage, the agriculture sector has a critical importance for Georgia to eliminate poverty, reduce unemployment and ensure the substantial improvement of living standards in the country. The issues of food security and food safety depend on the realization of the full potential of agriculture. The process of development in the agriculture is hindered by existence of weak and poorly developed infrastructure, lack of storage and refrigerator facilities, shortage of modern technologies and proper qualifications, chaotic situation in terms of irrigation and drainage systems and many more: therefore, the work efficiency and land productivity is extremely low. This negatively affects the competitiveness of the sector.

Since 2012, agriculture was declared one of the priorities of economic development in Georgia and the implementation of measures and projects started, aimed at facilitating the development of the sector (Our Village, 2015). Important steps were taken to revive practically destroyed the agricultural sector, including:

- The amount of GEL 636.671.877 (EUR 286.789.133) and USD 156.658.755 (EUR 117.846.900) was issued within the scope of the Preferential Agro Credit project;
- Various crops with the value of GEL 186.676.471 (EUR 79.436.796) were insured under the agriculture insurance programme;
- State co-financing for processing enterprises was USD 6.362.670 (EUR 4.873.534);
- Within the scope of the project for facilitating spring works of land-poor farmers, the agricultural lands with an area of 220.466 ha were cultivated;
- Under the "Plant Future" project, intensive type gardens were planted on the area of 89.63 ha;
- Until 20 September 2015, a status of the agricultural cooperative was granted to 1.162 cooperatives;
- Nationwide, 29 rehabilitation projects of ameliorative infrastructure are underway with the value of GEL 52.000.000 (USD 28.888.888) (EUR 22.127.659).

According to article 10 – "Agriculture and Development of Villages" of the Association agreement between Georgia and European Union signed on 27 June 2014, Georgia should ensure the development of villages and agriculture in accordance with the EU policy and best practice, and

should align its legislation with the European one. In this process, it is very important that the mechanisms of tax regulation for the agriculture sector would be compatible with European policy. Currently, the applicable tax legislation in the country exempts from the land tax (Property tax Act, 2018) land plots up to 5 ha (as of 1 March 2004) in the ownership of natural persons, and this fact, in the given case, makes obstacles for unifying small parcels into agricultural cooperatives, because the land of such cooperatives would be taxed. In particular exempt from the property tax, only property owned by an agricultural cooperative, used in agricultural activity and movable property leased to it for the same activity (except land).

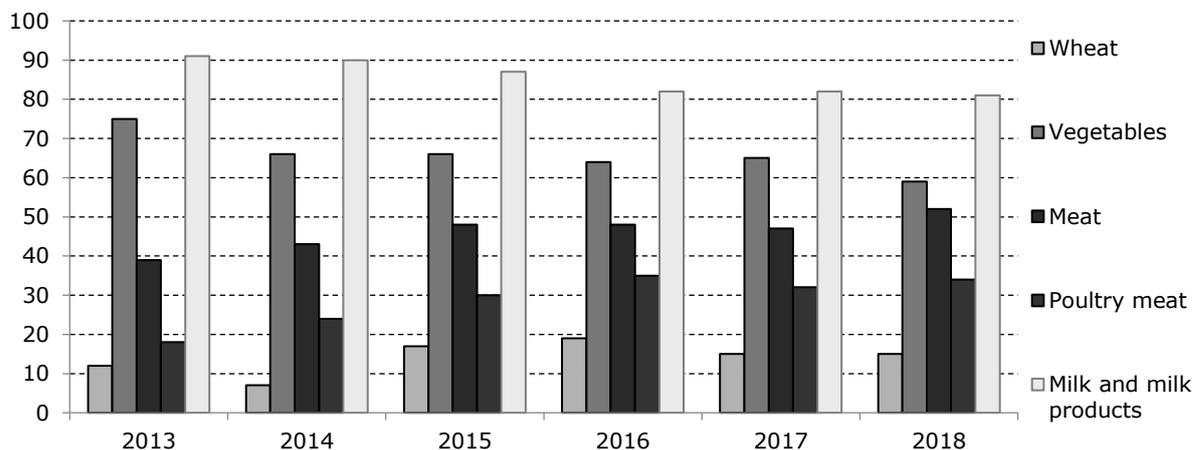
According to the Tax Code of Georgia taxable income earned from the primary supply of agricultural products produced in Georgia by a natural person engaged in agricultural production until 1 January 2023 if the gross income earned by the natural person from such supply during the calendar year does not exceed GEL 200 000 (EUR 62.305) is exempted from the income tax (Income tax Act, 2019). This provision too curbs any incentives in natural persons to combine their land plots in cooperatives, because a supply of agricultural production from natural persons is exempted from the income tax, while in the case of processing the agricultural production and its further supply to the market, neither a natural person nor a cooperative enjoys any tax benefits. Profit earned by an agricultural cooperative from a primary supply of agricultural products made in Georgia before their industrial processing (changing their commodity code) exempt from profit tax (Profit tax Act, 2017). It means that the tax legislation does not extend tax breaks to all spheres of agricultural activities of agricultural cooperatives, which include: manufacturing, processing, collecting, packaging, storing, transporting and/or selling agricultural products (Law of Georgia..., 2019).

In the economy of the country Since 1 January 2017, the reform in relation to the profit tax was implemented among them in the agriculture sector, for the purpose of attracting internal investments. The main purpose of the reform was to implement a scheme, according to which in the case if a profit would not be distributed in the form of dividends, and would be reinvested, it will not be taxed. This was intended to become a basis for the development and expansion of enterprises including cooperatives. Although, in the conditions of this reform, the transformation of small private farms into cooperatives was not facilitated, which is proved by the fact that as of 1 June 2019, the status of acting subject was only held by 197 cooperatives (Legal status, 2020), while in 2015 this figure was 1162. Georgia is characterized mainly by farmers with small land parcels; in agriculture 640 K households and only 2.2 K legal persons (Rural Development Strategy, 2019): - therefore, it is necessary to establish cooperatives as entrepreneurial subjects for the development of this sector.

In parallel to the reforms conducted in the agriculture sector, some steps were taken to introduce a liberal trade regime with certain countries (Economic Overview, 2017-2020). The agreement signed with the EU on the Deep and Comprehensive Free Trade Area (DCFTA) was provisionally entered into force on 1 September 2014. Georgia has also signed free trade agreements with the CIS and Turkey (2008), Most Favored Nation Treatment (MFN) with the member states of the World Trade Organization (WTO) and the General System of Preferences (GSP) with the USA, Canada and Japan. In 2016, Georgia concluded negotiations with the European Free Trade Association (EFTA) on creating a free trade area. Free Trade Agreement between Georgia and China entered into force in 2018.

According to researchers of the 2000 tax reform in Estonia, the main goal of the tax reform was to stimulate investment growth (Prohorov A., 2017). So far, we cannot see substantial economic results of the tax reform in Georgia. Georgia currently consumes more imported agricultural

products, than produces them. The self-sufficiency ratio in terms of such important products as vegetables, milk and dairy products is decreasing since 2013. The self-sufficiency ratio for wheat is very low, which has also decreased since 2016 and currently stands at 15 % (Figure 1). The same goes for the self-sufficiency ratio for meat. In 2018, compared to 2013, the import of agricultural production was not decreased significantly (Food Security, 2019), and compared to 2017 it even increased (the import of food products usually fluctuates in the range of around 1 billion dollars annually).

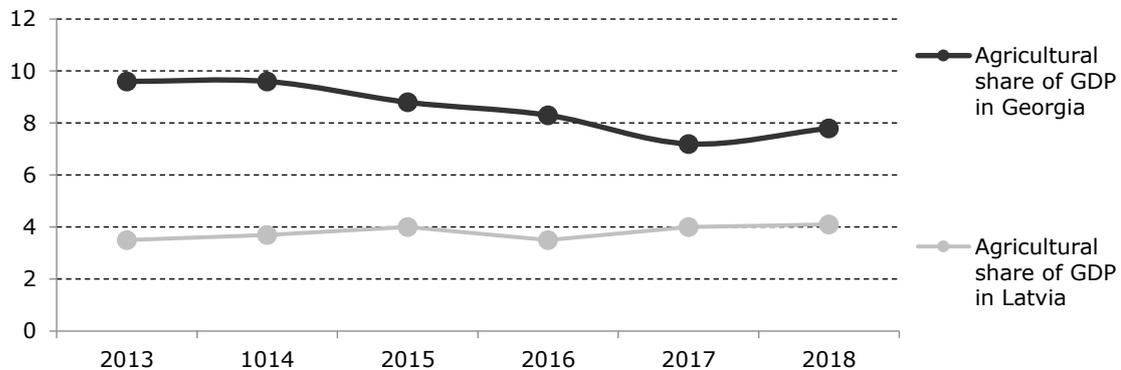


Source: National Statistics Office of Georgia

Fig. 1. Self-sufficiency ratio in Georgia in 2013-2018, %

The situation existing in the agriculture sphere makes clear that at this stage the significant growth rates are not achieved, as well as technological modernization of leading segments, development of infrastructure, taking steps to clear the obstacles for Georgian products on the international markets, elaboration, and implementation of policy for replacing the cheap imported production by local production on the Georgian market, expansion of processing plants and their stimulation to work on local raw materials by means of law regulations, and breathing new life into agricultural cooperatives. Therefore, the food value chain development in all segments of agriculture proved to be weak (primary production, processing and storing infrastructure, marketing and realization), and it was not able to respond to the fierce competition, which was the result of trade liberalization. The share of agriculture in the GDP in 2018, compared to 2013, decreased to 7.8 % from 9.6 % (General Agro Sector, 2020). In comparison, the share of agriculture in Latvia is smaller, but has increased slightly over the same period from 3.5 % to 4.1 % (Figure 2). The total share of agriculture, forestry and fishery in the GDP, at constant 2015 prices, in 2013 was GEL 2.679.3 M (EUR 1.206.8 M), in 2017 it was GEL 2.380.2 M (EUR 835.157.894) and in 2018 – GEL 2.708.7 M, (EUR 896.920.529) for 2018 This value increased only by USD 12.2 (EUR 10 M) million compared to 2013 (Gross Domestic Product, 2020). Foreign direct investments in the sector of agriculture and fishery in 2013 were USD 12.512.7 K (EUR 9.412.706 K), and in 2018 – minus USD 3.307.4 K (EUR 2.902.2 K), (Foreign Direct Investments, 2020) which means that foreign investments in the amount of more than three billion dollars, invested in the sector, were in some form withdrawn by investors. Investments in fixed assets of agriculture, forestry and fishery in 2013 were GEL 153.5 M (EUR 69 M), in 2016 was GEL 179.9 M (EUR 67 M), in 2017 was GEL 128.3 M (EUR 45 M) and in 2018 was GEL 171.7 M (EUR 56 M) (Investments in fixed..., 2020), which means that reinvestment in 2018 compared to 2016 decreased.

Thus, at this stage we can say that Georgia lacks a unified and consistent vision for the development of the agriculture sector, therefore, it is very important to understand to what extent the intervention of the state in the agriculture sector would be justified in the conditions of an open economy, so that to ensure the stable and irreversible process of development in the sector.



Source: National Statistics Office of Georgia, Central Statistical Bureau of Latvia

Fig. 2. Agricultural share of GDP in Georgia and Latvia, %

Villages in Georgia are characterized by undesirable demographic tendencies; the rural population is declining on the year-to-year basis; persons under 36 make up around 6 % of the total rural population (Rural Development Strategy, 2019). The motivation of young people to engage in agricultural activities will not only slow down the rate of migration but also will lay a foundation for the process of modernization in the agriculture sector, therefore Polish experience is very important for Georgia. One of the strengths of Polish agriculture is young age of agricultural producers compared to other European countries. In Poland, 14.7 % of all farmer managers are under the age of 35, while in the EU-27 on average 53.1 % of farmers are people over 55. Undoubtedly, strengthening the support for young farmers is justified by the greater potential of innovation and entrepreneurship of this group of farmers and their openness to innovation and understanding the need to solve environmental problems. As many researchers have noted, supporting of this group of farmers allows to increase the dynamics of the agriculture modernization process and ensure long-lasting, stable development (Brodzinski Z., 2019).

Facilitation of diversification of agriculture sector and development of non-agricultural activities in rural areas may create conditions for employment and a decent life for the rural population, it is also very important to develop multifunctional agriculture sector, which means promotion of non-agricultural industries in rural areas. In the European union, addition to the well-known and universal concept of sustainable development, on which all Community policies are based, including the (Common Agricultural Policy) CAP, the concept of multifunctional rural development is significant and capacious. The main assumption of this concept is the gradual departure from the domination of agriculture in the structure of the rural economy by development of additional, non-agricultural forms of economic activities and various functions of social services. Thus, on the one hand, this concept assumes the support for the agriculture modernization process, and on the other the acceleration of development of non-agricultural activities, which results in the general diversification of the rural economy (Adamowicz M., 2018).

In the agriculture sector of Georgia, 99.7 % of undertakings are household enterprises, which also can be considered one of the main impeding factors for the development of the sector, because all of them have small land parcels and carrying out agricultural activities in these conditions is inefficient. The existing experience proves that the only solution in this situation is to promote

agricultural cooperatives, which has also not been achieved in Georgia. Agricultural Cooperative provides comprehensive services for members, brings benefits to members and distributes proceeds to members. Benefits to members originate from three sources. First, production costs are reduced through increased market power for procurement of inputs and production efficiencies resulting from education and training. Second, sales revenues increase and market risk declines because of marketing efficiencies from economies of size and from cooperative storage, logistics, and marketing activities. Third, the cooperative increases access to and reduces the cost of credit for members (Zhu Q., Wachenheimb C. J., Ma Z., Zhu C. 2018).

It was proven in the study process that one of the main issues, which hinders a positive impact of Estonian experience on the development of farming enterprises in Georgia is an unprotected internal market, which is saturated with cheap imported products. According to 2018 data, the import accounted for 73 % of the external trade (External Trade., 2019): therefore, the incentives for engaging in agricultural production are very low. The next problem, which also hinders the normal functioning of the agriculture sector, is the poor condition of irrigation and drainage systems, and other elements of infrastructure.

It should be noted that the reform was implemented in the part of profit tax, while other taxes, such as land tax and value-added tax, are not sufficiently adjusted to the purpose of development of the agriculture sector and extension of tax benefits on all spheres of agricultural activities of cooperatives. In these conditions, it is impossible to achieve a structural diversification and modernization of the agriculture sector.

As a result, the entrance of Georgian agricultural production on external markets is hampered by so-called Technical Trade Barriers (TBT), such as technical regulations, standards, procedures of certification. It is especially relevant for agricultural products. In Georgia, only few primary and finished food and agricultural products have an international certificate (Millns J., 2013).

If nothing changes, the country will remain in the situation of a very fragile economy based on tourism and import, with a weak base for the production of agricultural and food products, which eventually determines its instability against crises. Moving the policy and institutional reform agenda forward will require higher level of political commitment, increased investment support, systematic capacity development at the organizational and individual levels, functioning monitoring and evaluation system, and improved research-policy linkages (Ragasa C., Babu S., Ulimwengu J., 2014).

Latvia introduced the corporate income tax (CIT) reform in 2018 on the basis of the Estonian experience. The aim of the reform was to enhance business development by encouraging business owners to leave a larger share of their profits in the company; thus, contributing to the increase of investment. However, in this aspect as it shall be admitted the agricultural sector was in a better situation even before the tax reform compared with other sectors in Latvia on average. According to the data of the State Revenue Service of the Republic of Latvia, the share of equity in the capital structure of agricultural companies has slightly increased every year until the tax reform, for example, it has grown from 47 % in 2015 to 49 % in 2018 in contrast to the average indicator of Latvia, which had fallen from 44 % to 40 %. The ratio of equity to long-term investment has also been more stable for the agricultural sector – 69 % of long-term investment in agricultural companies were on average financed by the equity.

The better situation in the agricultural sector was mainly driven by the growing EU and national subsidies for agriculture, which still continue to grow with an increase of 16.4 % between 2013 and

2018. In fact, about 2/3 of the income from agricultural production come directly from subsidies (56.5 % -71.7 %), which allowed farmers to increase their profits and become less dependent on the borrowed capital. In addition, it should be noted that agricultural companies in Latvia benefited significant tax reliefs also until 2018: the CIT was not calculated on the subsidies received, and the calculated CIT was reduced by EUR 14.23 per hectare of the utilised agricultural area (Leibus I., 2017).

In 2018, the CIT object was changed in Latvia due to the tax reform – the reinvested profit is no longer subject to the CIT. The new procedure for the CIT payment is very suitable for agricultural companies, especially in the crop sector. In agriculture, large investments are required for the purchase of agricultural land. Farmers mainly use the profits earned in previous years for this purpose. If, before the tax reform, farmers were liable to pay the CIT also on the part of profit used for the purchase of land, then the profit is no longer the tax object and is not taxable after the tax reform.

Consequently, it can be concluded that the development of agriculture in Latvia is mainly influenced by the EU and state aid payments. The impact of the tax reform on agriculture may not yet be assessed. However, it can be predicted that it will not be relevant, since significant tax reliefs and incentives have been applied in Latvia for a long time. Nevertheless, tax revenues from agriculture are increasing in recent years, this is mainly due to the rise in wages and salaries, and thus in the increase of the payroll tax and mandatory state social insurance contributions.

## **Conclusion**

- 1) The agriculture sector of Georgia had the undeveloped infrastructure, unprotected internal market, obstacles and barriers to external markets, lack of up-to-date technology, and low investment attractiveness in the agriculture sector at the moment of tax reform implementation. In these conditions, the sector proved to be completely unprepared for liberal trade regimes, because it could not withstand the intense competition, and, as a result, the development process is significantly slowed down. This situation is especially negatively affecting the levels of poverty and unemployment in Georgia.
- 2) The tax reform implemented in the agriculture sector of Georgia, was not able to perform the stimulating role in the development of sector, because the situation existing in the sector before the reform, in particular, the undeveloped infrastructure and lack of mechanisms for protection of internal market (the issue, which was not resolved for the last three decades), hampered the normal functioning of agricultural activities. Without solving this problem in the first place, in our opinion, any attempts to facilitate the development of the agriculture sector by means of tax reform would be unsuccessful.
- 3) The tax legislation of Georgia does not facilitate a development of agriculture sector, including in the part of profit tax, and does not create conditions for promotion of activities of agricultural cooperatives and for overcoming the crisis existing in the sector, nor it promotes an implementation of modern technology, which would positively affect the process of overcoming the existing barriers to the external markets. Therefore, it is necessary to review the tax legislation in Georgia.
- 4) The development of agriculture in Georgia and Latvia is difficult to compare in terms of tax reform. The development of agriculture in Latvia is mainly influenced by the EU and state aid payments,

as well as by significant tax reliefs that preceded the tax reform. The impact of the latest tax reform on agriculture may not yet be assessed.

## Bibliography

1. Adamowicz, M. (2018). *Normative Aspects of Rural Development Strategy and Policy in the European Union*. Proceedings of the 2018 International Scientific Conference "Economic Science for Rural Development". Issue 47. Jelgava, LLU ESAF. p. 21.
2. Brodzinski, Z. (2019). *Trends of the Process of Modernization of Farms Managed by Young Farmers*. Proceedings of the 2019 International Scientific Conference "Economic Science for Rural Development". Issue 50. Jelgava, LLU ESAF. pp. 312-313.
3. *Economic Overview: Rural Development Strategy Of Georgia For 2017-2020* (2017). Retrieved: <http://business.org.ge/wp-content/uploads/2018/05/document-1.pdf> Access:17.04.2019
4. *External Trade: National Statistics Office of Georgia* (2019). Retrieved: <https://www.geostat.ge/en/modules/categories/35/external-trade> Access: 12.02.2020
5. *Food Security: National Statistics Office of Georgia* (2019). Exports and Imports Of Food, Retrieved: <https://www.geostat.ge/en/modules/categories/297/food-security>. Access:05.12.2019
6. *Foreign Direct Investments: National Statistics Office of Georgia* (2020). Foreign Direct Investments By Economic Sectors, Retrieved: <https://www.geostat.ge/en/modules/categories/191/foreign-direct-investments>. Access:18.01.2020.
7. *General Agro Sector Statistics: National Statistics Office of Georgia* (2020). General Agro Sector Statistics 2013 – 2018. Retrieved: <https://www.geostat.ge/en/modules/categories/196/agriculture>. Access:30.01.2020
8. *Gross Domestic Product: National Statistics Office of Georgia*. (2020). Gross Domestic Product at Constant Prices, Retrieved: <https://www.geostat.ge/en/modules/categories/23/gross-domestic-product-gdp>. Access: 20.01.2020.
9. *Income Tax: Tax Exemption, Tax Code of Georgia* (2019), article 82. Retrieved: <https://matsne.gov.ge/en/document/view/1043717?publication=152>. Access:15.11.2019.
10. *Investments in Fixed Assets: National Statistics Office of Georgia* (2020). Statistical survey of enterprises, Retrieved: <https://www.geostat.ge/en/modules/categories/326/statistical-survey-of-enterprises> Access:07.03.2020
11. *Law of Georgia On Agricultural Cooperatives* (2019). Areas of Activity of Agricultural Cooperatives, article 6. Retrieved: <https://matsne.gov.ge/en/document/view/1972742?publication=3>. Access:04.10.2019.
12. *Legal status: National Statistics Office of Georgia* (2020). Number of Registered and Active Entities By Organizational –Legal Form, Retrieved: <https://www.geostat.ge/en/modules/categories/67/by-legal-status>. Access:30.01.2020.
13. Leibus, I. (2017). Assessment of Agricultural Tax Burden in Latvia. Proceedings of the International scientific conference "Economic science for rural development", Issue. 46: *New Dimensions in the Development of Society. Home Economics. Finance and Taxes*, pp. 272-278
14. Millns, J. (2013). *Agriculture and Rural Cooperation Examples from Armenia, Georgia and Moldova (FAO)*. Retrieved: <http://www.fao.org/3/ar424e/ar424e.pdf> Access: 07.02.2020.
15. Our Village (October 10, 2015) (2015). Report on the Activities of the Ministry of Rural Development 2013-2015, Retrieved: <http://www.alsc.ge/Ge/News/Paper/8> .Access: 05.09.2019.
16. Pawlak, K. (2018). *Agricultural Support Policy as a Determinant of International Competitiveness: Evidence from the EU and US*. Proceedings of the 2018 International Scientific Conference "Economic Science for Rural Development". Issue 47. Jelgava, LLU ESAF. p. 237
17. *Profit Tax: Tax Exemption, Tax Code of Georgia* (2017), article 99. Retrieved: <https://matsne.gov.ge/en/document/view/1043717?publication=152>. Access:15.11.2019.
18. Prohorov, A. (2017). Corporate Income Tax in Latvia And Estonia: Effects on Entrepreneurial Activity, Investment, The Unemployment Rate, Tax Revenues and the Economic Growth of the State. Jelgava. p. 224.
19. *Property Tax: Tax Exemption, Tax Code of Georgia* (2018), article 206., Retrieved: <https://matsne.gov.ge/en/document/view/1043717?publication=152>. Access: 12.10.2019.
20. Ragasa, C., Babu, S., Ulimwengu, J. (2014). International Reforms and Agricultural Policy Process: Lessons from Democratic Republic of Congo. *Agricultural and Food Economics*. Issue: 2, Article 4. Retrieved: <https://agrifoodecon.springeropen.com/articles/10.1186/s40100-014-0004-3> Access:17.01.2020
21. *Rural Development Strategy Of Georgia For 2021-2027 (ARDSG)* (2019). P. 11 Retrieved: <https://mepa.gov.ge/Ge/PublicInformation/16872> Access: 03.02.2020.
22. Zhu, Q., Wachenheimb, C.J., Ma, Z., Zhu, C. (2018). Supply Chain Re-engineering: a Case Study of the Tonghui Agricultural Cooperative in Inner Mongolia. *International Food and Agribusiness Management Review*. Issue 1, Volume 21, pp. 157. Retrieved: <https://www.wageningenacademic.com/doi/pdf/10.22434/IFAMR2016.0095> Access: 04.02.2020

## PRINCIPLES OF EFFECTIVE MENTORING COMMUNICATION IN ENTREPRENEURSHIP: THE RESULTS OF A SURVEY OF EXPERTS

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**Abstract.** With the development of mentoring networks, communication between mentors and mentees and related problems in entrepreneurship have become an increasingly important topic in recent years. The aim of the research is to identify the most important problems that hinder an effective communication process between the mentor and the mentee in entrepreneurship based on expert opinions on the elements of and barriers to the communication process. The research results have revealed that mentors' willingness to communicate, appropriately engaging in dialogue with their mentees, as well as honour and other skills and traits are essential. The experts have emphasized that it is important that the mentee does not take the mentor's experience literally but critically assesses whether his/her resources are aligned with the goal. According to the experts, the most essential barriers to communication were a lack of time and logical barriers and obstacles that emerged to partners with different ways of thinking. Researchers need to continue the research started by the authors of the paper by working on and designing a communication model for mentors and mentees, taking into account the communication barriers identified in the present research and other factors relevant to communication in entrepreneurship.

**Key words:** mentoring, communication barriers, communication skills, entrepreneurship.

**JEL code:** A00; L26; D83

### Introduction

Anyone communicates with various teachers, influencers and promoters, which indicates that the presence of such a person is important. The role of communication in starting up and developing a business is emphasized in the theoretical literature as well. Those with extensive professional and business contacts are likely to have more information about opportunities, more likely to acquire information at an earlier point, have a larger pool of potential reference providers and 'careerbrokers', and more likely to be known to those who control or affect jobs (Feeney M. K., Bozeman B., 2008). Such a person in business could be a mentor as well. In today's world, a mentor is described as a person with some defined qualities, an expert who oversees and trains a younger person (Memon J., Rozan M. Z. A., et al., 2015). Effective mentoring can contribute to increased self-efficacy and effectiveness and improved and expanded skills and competencies, which can support individual advancement, including in educational and career domains (Montgomery B. L., 2017). When engaged in dyadic mentoring relationship, mentors elaborate and convey supportive messages depicted as "specific lines of communicative behaviour enacted by one party with the intent of benefiting or helping another" (Memon J., Rozan M. Z. A., et al., 2015).

This means that communication and knowledge of principles of effective communication are essential characteristics of mentoring. Mentoring in this top-down framework then emerges as interactions, largely based on a one-way flow of information, between a mentor and an individual being mentored (i.e., a mentee). The focus of the mentoring can include a range of goals, including skills or competency development, psychosocial or socioemotional support, and career development (Montgomery, B. L., 2017).

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Mentoring is different from other related forms of discrete support such as teaching and coaching; in case of mentoring, the mentor puts the mentees' interest as complete priority, not as part of a set of priorities. The theoretical literature emphasizes knowledge of the mentor's communication skills and principles to establish effective communication between the mentor and the mentee. Communication opportunities, forms, skills and principles have been analysed and researched in the aspect of business, organizational and interpersonal communication both in Latvia and abroad (Renge V., 2003; Overton R., 2007; Mistre Z., Zvaigzne A., 2012).

The Organisation for Economic Co-operation and Development (OECD) has declared communication as one of the significant 21<sup>st</sup> century skills (Ester van Laar, et al., 2020). In mentoring, this is the most important tool for achieving results because the mentor alone does not guarantee career growth, yet the quality of the growth depends on the relationship between the mentor and the mentee (LIAA, 2009).

The process of communication between the mentor and the mentee is called interpersonal communication. Interpersonal communication involves interaction between two or more people, usually with a direct connection and with some sort of relationship being assumed. A sufficient understanding of the communication process by the mentor is essential for proper collaboration between the mentor and the mentee.

Mentors need to constantly adjust their communications to meet the needs of their protégés, which demands a "deep understanding of their own communication styles and a willingness to objectively observe the behaviour of the mentee" (Memon J., Rozan M. Z. A., et al., 2015).

An important concept is also organizational communication, especially between the manager and subordinates. There is need for interaction and understanding of management-employee relations hence it will impact on the organizational performances and organizational outcomes. Communication is very essential elements of a successful business. Communication is functions of the management process. When communication is absent in the top-level management to the lower or mid-level management, the organization will not be or is not effective. To implement the management functions of planning, organizing, motivating, leading and controlling, it is very important to maintain the communication among the stakeholders of the organization. Communication is a very important skill and the need for efficient management, through which managers establish and maintain interactions between employees to perform necessary daily tasks properly (Nabi N. M., Foysoyl K. M., Adnan S. M., 2017). Such communication skills are also described as communication competence. Communication competence is defined as the perceived effectiveness and appropriateness people believe they have as communicators, and it is related with a need to fulfil interpersonal objectives (Velasquez A., Rojas H., 2017).

The concept of communication competence has been uncovered as a key factor for individuals' interpersonal interactions. The notion of communication competence allows for an understanding of the way in which people direct their communication and achieve their relational goals. Communication competence is defined as an individual's disposition for effective and appropriate interaction given a particular interpersonal relational context (Velasquez A., Rojas H., 2017). People perceive the same situation, event or information differently, depending on their individual psychological characteristics, experience and knowledge. Very often, perception problems are determined by the status, position of the communication partner (Renge V., 2003).

Communication competence involves the quality of communication, which is commonly composed of the elements of appropriateness and effectiveness, and communication competencies are believed

to be among the most central qualifications in the workforce as well (Mikkelson A., York J., Arritola J., 2015).

In terms of significance, social intelligence, empathy, verbal intellectual abilities, self-respect and respect to others, emotional balance, extroverted-introverted dispositions, aggressiveness, flexibility to communicate successfully are equally important. Some research studies have found that the perceived communication competence of a supervisor was related to the employee's satisfaction with the supervisor and a supervisor's communication competence was related to the level of organizational identification in subordinates (Mikkelson A., York J., Arritola J., 2015). The following aspects and stages of building feedback in interpersonal communication are also emphasized (Hartley P., 2001): nonverbal communication, reinforcement, questioning, reflecting, opening and closing, explanation and listening. They provide communication that focuses on mutual understanding and transferring knowledge to the new entrepreneur, which is essential in mentoring in order to understand whether the mentor has completed his or her mission.

The need for the present research was determined by previous research studies done in the field of mentoring (within the research project Mentoring Opportunities for Entrepreneurship Development in Rezekne Municipality funded from a research grant and implemented by an RTA researcher group in 2018), which have found that that new entrepreneurs need psychological and emotional assistance to start their own businesses, as well as a professional opinion from the other side. To accomplish this, the mentor has to have a high level of communication competence; therefore, the present research sought to identify experts' opinions on key skills in and barriers to communication between the mentor and the mentee (RTA researcher group, 2018).

**The research aim** is to identify the most important problems that hinder an effective communication process between the mentor and the mentee in entrepreneurship based on expert opinions on the elements of and barriers to the communication process.

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

- 1) To theoretically examine the nature of mentoring;
- 2) To assess the results of a structured survey/interview of experts.

**Research methods used:** the present research applied the descriptive approach for identifying the behaviours being associated with effective interpersonal communication – defining the skills of interpersonal communication. In addition, the following methods were employed: monographic, analysis, synthesis, statistical analysis and a sociological method – structured expert surveying/interviewing.

The present research conducted a questionnaire survey, in which specialists and experts in communication and business were requested to rate some assertions defined. Statistical analysis methods were employed to process the data.

The present research used specialist literature pertaining to the fields of mentoring and entrepreneurship as well as research papers by foreign and national scientists and other materials as well as articles by industry experts that pertained to the research topic.

## **Research results and discussion**

There are various uses for mentoring; therefore, there are many different definitions of mentoring. Researcher R. Sullivan emphasizes the strong relationship between the mentor and the mentee that creates a safe environment for the mentee to grow and develop (Sullivan R., 2000). Mentoring could be described as a two-way "communication relationship" consisting of verbal and non-verbal

behaviour aimed at offering or asking for help. As part of this dialogue communication, the mentor develops and provides supportive messages, described as specific communication behaviours, or actions of one party with the intention of benefiting or helping another (Burlison E., et al., 2002). This means that mentors need to regularly adjust their communication in order to understand each other's needs; therefore, they need an understanding of their communication style, a desire to objectively assess the behaviour of the person being assisted (Radu Lefebvre M., Redien-Collot R., 2013). Mentoring is not an advisor job. It represents a dialogue and an exchange of ideas. The mentor helps the mentee get a broader and more comprehensive view of the business and opportunities for its expansion as well as encourages the mentee to act. The mentor is an experienced, entrepreneurial and knowledgeable entrepreneur or manager or industry specialist who dedicates his or her time, shares the experience and gives advice for free and of his or her own free will to help a new entrepreneur to become competent in the business environment and develop his or her own business, thereby assisting in achieving his or her goals. The mentor listens to the mentee, asks questions, challenges the mentee's goals, examines the mentee, gives advice and shares his or her experience and contacts. The mentee is a prospective or current entrepreneur who wants to start or expand his or her own business with the help of the mentor (LLKC, 2014).

In March 2020, a structured survey/interview of experts in mentoring was conducted by the authors within the project Development and Introduction of a Communication Competencies Model for Enhancing and Maintaining a Business Mentor Network to identify the experts' opinions on barriers to and prerequisites for mentor and mentee communication as well as to find solutions to enhancing the communication. The purpose of the structured survey/interview of experts was to identify the experts' opinions on the communication skills, barriers and problems faced by mentors and mentees in the communication process.

The expert surveying method was adapted to the research hypothesis and the survey was conducted in several successive stages. Initially, based on scientific research studies (Renge V., 2003; Memon J., et al., 2015) and in consultation with experts in mentoring and sociological surveyors, a structured questionnaire was developed by the authors.

The structured questionnaire consisted of three sets of questions, in which the experts rated:

- 1) the role of rational and emotional aspects and characteristics of mentor communication and of communication skills;
- 2) the role of non-verbal communication ways;
- 3) the impact of communication barriers on communication between the mentor and the mentee.

To conduct the survey properly, this specific field was carefully analysed and, in the result, the criteria selected for the survey were subsequently adapted to the objectives of the survey in the form of indicators to be rated in a 5-point system. The experts rated answers to questions by using semantically graduated five-level scales: very unimportant (1 point), unimportant (2 points), neither important nor unimportant (3 points), important (4 points) and very important (5 points).

At the next stage, the authors conducted a pilot test of the questionnaire with two industry experts and three researchers. Several inaccuracies were identified in the survey questionnaire concerning the use of terms and an understanding of definitions, which were corrected in a timely manner.

At the third stage, the experts whose professional field, position and experience were relevant to communication problems in mentoring were selected for the survey. The experts were selected based on a prior assessment of their level of competence. Nine experts participated in the structured survey/ interview. The criteria for expert selection were as follows: higher education, at least 10

years' experience in consulting, managing/ conducting training and entrepreneurship/ communication; the expert had to be socially active and motivated to increase peer engagement in entrepreneurship.

For confidentiality purposes and at the request of the experts, the personal identities of the experts were not disclosed, and the results of the structured survey were presented in an aggregated form. In the expert survey, each expert received a questionnaire that was coded and processed by means of SPSS (Statistical Package for the Social Science) and Microsoft Excel analysis tools.

At the next stage, the data were statistically processed, summarised and interpreted. At the initial stage of the data processing, the authors aggregated the data, computed the mean values, ranked the answers given and grouped and summarized the results.

Rating the role of rational and emotional aspects and characteristics of mentor communication and of communication skills (in a 5-point system), the experts admitted the following factors to be the most important (scored equally): "Skill to actively listen (reflect, ask questions, conclude, discuss)" and "Experience". The experts rated the mentioned factors at 4.89 out of 5 with a mode of 5 that indicated that a rating of 5 was the most frequently given one (Table 1).

Table 1

**Ratings of the role of rational and emotional aspects and characteristics of mentor communication and of communication skills by the experts, points (n=9)**

Factors	Average rating	Mode
Ability to create a wish to communicate and cooperate	4.78	5
Ability to correctly choose the strategy and tactics of dialogue	4.22	5
Ability to arouse the partner's interest in a topic of conversation and allow the partner to make an informed choice	4.44	4
Ability to ensure correct dialogue	4.56	5
Ability to control one's activity and coordinate it with a communication partner	4.44	4
Ability to regain inner peace after intense communication	4.00	3a
Skill to actively listen (reflect, ask questions, conclude, discuss)	4.89	5
Ability to put oneself in another's shoes, understand each other's emotions and experiences	4.44	5
Ability to interpret a person by appearance and behaviour	3.44	4
Ability to argue	4.67	5
Openness	4.56	5
Honesty	4.78	5
Ability to use modern communication technologies	4.22	4
Ability to communicate electronically	4,00	4
Availability (reachability)	4.33	5
Sex	3.11	4
Age	3.22	3a
Nationality	3.00	4
Ideological views	3.56	5
Social status	3.00	3
Education	3.89	4
Experience	4.89	5

*a.-There are several modes. The smallest value is presented.*

*Source: authors' calculations based on the structured survey/interview of experts*

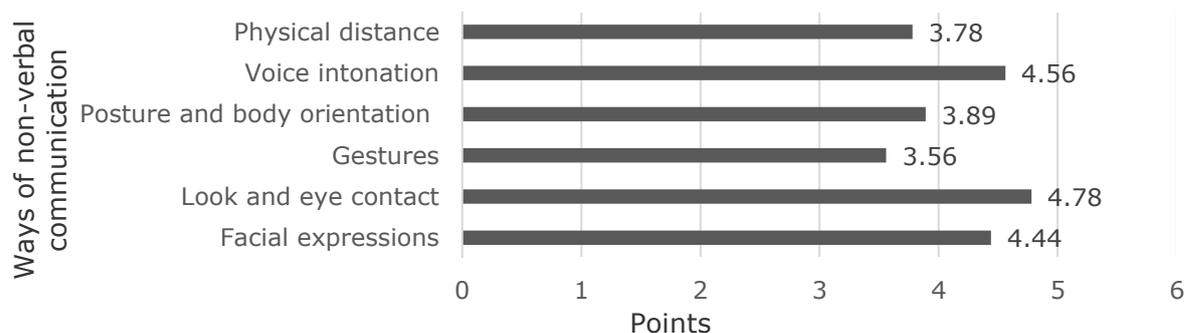
The next factors that, according to the experts, were important in mentor communication were as follows: "Ability to create a wish to communicate and cooperate" and "Honesty". The experts rated the mentioned factors on average at 4.78 out of 5. The choices of the experts were probably affected

by the idea of respectful communication, which was based on the core values and skills emphasized by a US psychologist, the world-renowned conflict mediator, M. B. Rosenberg in his research studies. M. B. Rosenberg's research has been based on a finding that an individual is, in principle, ready to respect, cooperate and behave calmly as long as the individual trusts that his or her needs are heard and considered as well as respected in action (Rosenberg M. B., 2005).

The experts' opinions on the factors "Ability to regain inner peace after intense communication" and "Age" were different, and it was not possible to identify the most frequently given rating.

Answering the open question of the questionnaire "What skills does an expert need?", four of the nine experts gave diverse answers. The experts gave short answers: "independent" or "the mentor has to be able to inspire peers". Another expert believed that it was "the ability to change the mentee's belief system to synchronize the mentee's goals and available resources so that the mentee does not literally take over the experience but critically assesses the alignment of his or her resources with the goal, and vice versa. The successor has to be given a variety of similar solutions so that the mentee can generate his or her best choice". The third expert believed that "relevant experience and knowledge in the field of the mentored entrepreneur or business (or business expansion that requires support, such as sales promotion, marketing activities etc.) that contributes to an overall entrepreneurship knowledge of the business model and management, as well as a systematic and structured approach to providing targeted and effective mentoring throughout the support phase" are necessary.

Analysing the ratings of the role of non-verbal communication ways given by the experts, it should be noted that the average rating given to 3 out of 6 non-verbal communication ways in the 5-point system was 4 points and above. The experts gave the highest ratings to the following ways of non-verbal communication: a look and eye contact (4.78 out of 5 points), voice intonation (4.56 out of 5 points) and facial expressions (4.44 out of 5 points) (Fig. 1). Gestures as a way of non-verbal communication received the lowest expert rating (3.56 out of 5 points).



Source: authors' calculations based on the structured survey/interview of experts

Fig. 1 Average ratings of the role of non-verbal communication ways by the experts, points (n=9)

According to the experts, the most essential barriers to communication between the mentor and the mentee were as follows: lack of time (4.78 out of 5 points) and logical barriers and obstacles (emerge among partners with different ways of thinking (a rationally minded communication partner is unlikely to accept intuitive arguments)) (4.67 out of 5 points). A mode of the ratings of the mentioned barriers was 5, which indicated that an expert rating of 5 was the most frequently given one (Table 2). The authors of the research believe that the choice of experts was likely determined by the fact that an experienced entrepreneur – a potential mentor – invests a lot of time in developing his or her business, has a family and is active in public life; for these reasons, the

entrepreneur has no time to consult other entrepreneurs. In addition, diverse development levels of individuals lead to different ways of thinking.

Table 2

**Ratings of the impact of communication barriers on communication between the mentor and the mentee by the experts, points (n=9)**

Barriers	Average rating	Mode
1. Technical barriers and obstacles	3.22	3a
2. Psychological barriers and obstacles		
2.1. Reference system, different status	3.33	4
2.2. Selective listening	4.33	5
2.3. Attitude to the communicator	4.33	5
2.4. Source reliability	4.56	5
2.5. Filtration	4.44	5
2.6. Lack of time.	4.78	5
2.7. Communication overburden	4.33	5
2.8. Dislike to the form	4.00	4
3. Psychophysiological barriers	4.11	4
4. Social barriers and obstacles	3.89	4
5. Cultural and national barriers and obstacles	4.00	5
6. Logical barriers and obstacles	4.67	5
7. Stylistic barriers and obstacles	4.22	5
8. Semantic barriers and obstacles	4.11	4
9. Phonemic barriers and obstacles	3.44	3

*a.-There are several modes. The smallest value is presented.*

**Source: authors' calculations based on the structured survey/interviews of experts**

Rating the most essential technical barriers and obstacles to communication between the mentor and the mentee, the opinions of the experts differed, which did not allow identifying the most frequently given rating. Technical barriers often relate to environmental factors: communication and Internet problems for remote communication, acoustics, deflecting environmental factors (bright sun, too dark wall colour); weather conditions (too hot or too cold).

**Conclusions, proposals, recommendations**

- 1) Mentoring is one of the most effective ways to transfer successful experience among entrepreneurs by actively sharing knowledge, experience and contacts. Mentoring in entrepreneurship is mainly used to promote the development of new and less experienced enterprises.
- 2) The research results have revealed that mentors' willingness to communicate, appropriately engaging in dialogue with their mentees, as well as honour and other skills and traits are essential. The experts have emphasized that it is important that the mentee does not take the mentor's experience literally but critically assesses whether his/her resources are aligned with the goal.
- 3) Feedback is one of the essential components of the communication process; according to the experts, mentoring participants should have skills to actively listen (reflect, ask questions, conclude, follow a thought).
- 4) The research results have revealed that mentors need relevant experience and knowledge in the field of the mentored entrepreneur or business that contributes to an overall entrepreneurship knowledge of the business model and management, as well as a systematic and structured approach to providing targeted and effective mentoring throughout the support phase.

- 5) The research results have revealed that the most essential barriers to communication were a lack of time and logical barriers and obstacles that emerged to partners with different ways of thinking.
- 6) Researchers need to continue the research started by the authors of the paper by working on and designing a communication model for mentors and mentees, taking into account the communication barriers identified in the present research and other factors relevant to communication in entrepreneurship.

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## Bibliography

1. Burleson, B., MacGeorge, E., Knapp, M. and Daly, J. (2002). *Supportive Communication. Handbook of interpersonal communication* (3<sup>rd</sup> ed.). London, England: SAGE, pp. 374-424.
2. Ester van Laar, Alexander, J. A. M. van Deursen, Jan A. G. M. van Dijk, and Jos de Haan (2020). Determinants of 21st-Century Skills and 21st-Century Digital Skills for Workers: A Systematic Literature Review Retrieved:[https://www.researchgate.net/publication/338800933\\_Determinants\\_of\\_21st-Century\\_Skills\\_and\\_21st-Century\\_Digital\\_Skills\\_for\\_Workers\\_A\\_Systematic\\_Literature\\_Review/link/5e2ae9014585150ee77ee4a4/download](https://www.researchgate.net/publication/338800933_Determinants_of_21st-Century_Skills_and_21st-Century_Digital_Skills_for_Workers_A_Systematic_Literature_Review/link/5e2ae9014585150ee77ee4a4/download) Access: 10.03.2020.
3. Feeney, M.K., Bozeman, B. (2008). Mentoring and Network Ties. *Human Relations, Volume 61, Issue 12*, pp.1651-1676.
4. Hartley, P. (2001). *Interpersonal Communication* (2<sup>nd</sup> ed.) London and New York: Routledge, p.42.
5. LIIA (2009). *Labas prakses piemeri mentoringa (Examples of Good Practice in Mentoring)*. Retrieved: [www.liaa.gov.lv/files/liaa/attachments/16\\_labas\\_prakses\\_piemeri\\_mentoringa.pdf](http://www.liaa.gov.lv/files/liaa/attachments/16_labas_prakses_piemeri_mentoringa.pdf) Access: 24.10.2019.
6. LLKC (2014). Biznesa mentoru tikla rokasgramata mentoriem un pieredzes parnemejiem (Business Mentor Network Handbook for Mentors and Mentees). Retrieved: [http://new.llkc.lv/sites/default/files/baskik\\_p/pielikumi/mentorings-vadlinijas.pdf](http://new.llkc.lv/sites/default/files/baskik_p/pielikumi/mentorings-vadlinijas.pdf) Access: 10.03.2020.
7. Memon, J., Rozan, M. Z. A., Ismail, K., Uddin, M., Daud, D. (2015). *Mentoring an Entrepreneur: Guide for a Mentor*. SAGE Open, January-March 2015, pp.1-10.
8. Mikkelsen, A., York, J., Arritola, J. (2015). Communication Competence, Leadership Behaviors, and Employee Outcomes in Supervisor-Employee Relationships. *Business and Professional Communication Quarterly, Volume 78, Issue 3*, pp. 336-354.
9. Mistre, Z., Zvaigzne, A. (2012). Assessment of Development Scenarios for The Regional Internal Communication and Information System of the Latvian Blood Donors Service. *Proceedings of the 2012 International Conference Economic Science for Rural Development, No.28*. Jelgava, LLU ESAF, pp. 91-98.
10. Montgomery, B.L. (2017). Mapping a Mentoring Roadmap and Developing a Supportive Network for Strategic Career Advancement. April-June, pp. 1 -13.
11. Nabi, N.M., Foyso, K.M., Adnan, S.M. (2017). The Role and Impact of Business Communication on Employee Performances and Job Satisfactions: A Case Study on Karmasangsthan Bank Limited, Bangladesh. *Arabian Journal of Business and Management Review, Volume 7, Issue 3*, pp. 1-8. Retrieved: <https://www.hilarispublisher.com/open-access/the-role-and-impact-of-business-communication-on-employee-performancesand-job-satisfactions-a-case-study-on-karmasangsthan-bank-li-2223-5833-1000301.pdf> Access: 10.03.2020.
12. Overton, R. (2007). *Business communication*. Boat Harbour: Martin Books. p.97.
13. Radu, Lefebvre, M., Redien-Collot, R. (2013). "How to do things with words": The discursive dimension of experiential learning in entrepreneurial mentoring dyads. *Journal of Small Business Management, Volume 51*, pp.370-393.
14. Renge, V. (2003). Organizaciju psihologija (Organizational Psychology). Riga: Kamene, pp. 50-57.
15. Rosenberg, M. B. (2003). *Nonviolent communication: A language of life* (2<sup>nd</sup> ed.). Encinitas: Puddle Dancer Press, p.240.
16. RTA researcher group (2018). Research project: Mentoring Opportunities for Entrepreneurship Development in Rezekne Municipality: Rezekne Academy of Technologies, p. 47.
17. Sullivan, R. (2000). Entrepreneurial learning and mentoring. *International Journal of Entrepreneurial Behaviour and Research, Volume 6, Issue 3*, pp.160-175.
18. Velasquez, A., Rojas, H. (2017). Political Expression on Social Media: The Role of Communication Competence and Expected Outcomes. *Social Media + Society, January - March*, pp.1 -13.