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Viktória VÁSÁRY¹, Dorottya SZABÓ²

CHARACTERISTICS OF SUSTAINABLE BIOECONOMY IN THE CEE MACRO-REGION

In the coming decades to achieve further progress in sustainable growth of agriculture, aquaculture, forestry and food industry in the CEE countries there is a need to face specific challenges through the lens of bioeconomy, thus by shifting the emphasis to research, innovation and transnational cooperation for knowledge-based development. A shared strategic research and innovation framework that has already been offered by the Central-Eastern European Initiative for Knowledge-based Agriculture, Aquaculture and Forestry in the Bioeconomy, i.e. by the BIOEAST Initiative might enable these countries to work towards the development of a sustainable bioeconomy while effectively joining the European Research Area. The study is aimed at conceptualizing bioeconomy, analysing key socio-economic indicators of the 'BIOEAST countries' bioeconomy and describing the implications for policymakers based on the results of the 'BIOEAST Bioeconomy Capacity Building Survey'.

Based on the results of the survey the major findings of the research verify and strengthen the objectives of the BIOEAST Initiative. The individual results of the survey in terms of major bottlenecks in the supply chain, missing elements hindering competitiveness, the opportunities to raise competitiveness and functions of the intervention system led to the conclusion that the creation of sustainable bioeconomy explicitly requires triple-helix stakeholders to find efficient collaboration mechanisms and build synergies.

Keywords: bioeconomy, circular economy, sustainability, research and innovation.

JEL Classification Codes: O13, O3, Q16, Q58.

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Introduction

Over the last ten years the resources of the Common Agricultural Policy have helped the Central and Eastern European (CEE) regions of the European Union (EU) to improve their agri-food sectors, environment and rural areas, thus increasing economic and social cohesion. In the coming decades, however, to achieve further progress in sustainable growth of agriculture, aquaculture, forestry and food industry there is a need to face specific challenges arising from climate change in the Continental Biogeographical Region, and the common societal and governance issues of the CEE countries through the lens of bioeconomy, thus by shifting the emphasis to research, innovation and transnational cooperation for knowledge-based development. As the European Union sees significant internal disparities in terms of research and innovation performance – as also identified in the Innovation Union Scoreboard – to the disadvantage of the CEE countries, they are hindered in effectively joining the European Research Area. Accordingly, considerable efforts are required to address present and future challenges successfully and to undertake these efforts efficiently a suitable framework is necessary. This framework ought to be a shared strategic research and innovation framework for working towards the development of a sustainable bioeconomy in the CEE countries. The framework itself has already been offered by the Central-Eastern European Initiative for Knowledge-based Agriculture, Aquaculture and Forestry in the Bioeconomy, i.e. by the BIOEAST Initiative.

The BIOEAST Initiative is an open initiative started by the Visegrad Group Countries – Czech Republic, Hungary, Poland, Slovakia - and joined by Bulgaria, Romania, Slovenia, Croatia and Estonia. (Additional details are to be found on the BIOEAST website: <http://www.bioeast.eu/>) It is aimed at bridging the gap in terms of research and innovation between western EU member states and the CEE macro-region and could serve as the thematic framework of a Coordination Support Action. Furthermore, it is capable of supporting and strengthening the conceptual framework of the circular bioeconomy. (BIOEAST, 2018)

The study is aimed at conceptualizing bioeconomy, analysing key socio-economic indicators of the 'BIOEAST countries' bioeconomy and describing the implications for policymakers based on the results of the 'BIOEAST Bioeconomy Capacity Building Survey'.

Methodology

Both primary and secondary research has been carried out. The latter included review of relevant international literature and documents on circular economy and bioeconomy and the primary research focused on statistical analysis of data gathered in a survey. The 'BIOEAST Bioeconomy Capacity Building Survey' was adopted in the framework of

the BIOEAST Initiative from the Survey jointly elaborated during the Danube-INCO.NET project by the Central European Initiative and PANNON Pro Innovations and was hosted online (on the website of the Hungarian Research Institute of Agricultural Economics) for three months in Summer 2017. The survey intended to spotlight the main challenges of the development of bioeconomy in the Visegrad Countries, Bulgaria, Romania, Slovenia and Croatia³ by mapping knowledge and capacities, furthermore, through the collection of the views and suggestions of the respondents on how to minimize bottlenecks. It was designed specifically for respondents from the public sector, research and academia, as well as businesses that are active along the biomass value chain and was divided into 4 sections. The aim of the „Capacity mapping” section was to better understand the activities of the companies, institutes and government agencies and their potential for advanced bio-based products. In Section II the focus was set on the bottlenecks preventing the production of advanced biobased materials and fuels which are produced from biomass sources not competing with current patterns of food and feed production and mostly considered as waste or by-product. In Section III we intended to learn about what stakeholders think the most beneficial for CEE macro region in developing bioeconomy. The last section was aimed at the identification of wished interventions.

The respondents were chosen randomly through personal contacts of experts working in the Hungarian Research Institute of Agriculture, Ministry of Agriculture and the Chamber of Agriculture (they created a judgement sample) and by snowball sampling to get further contacts from respondents. The questionnaire was sent to a small subset of the target groups and the answers were examined through descriptive and inferential statistical analysis.

Theoretical background

The literature review on circular economy (CE) and bioeconomy proves that it is a difficult task to provide conceptual clarity and to recognize relationships between these terms plus the concept of sustainability, a term often used together with CE and bioeconomy. Definitions and analysis of features of these concepts are published by several authors such as - not aiming to be exhaustive – Kovács et. al., 2015; Kirchherr et al., 2017; Geissdoerfer et al., 2017; Ellen Macarthur Foundation, (describing and analysing CE); Aguilar et al., 2018; Bell et al., 2018; D’Amato et al., 2017; Dupont-Inglis et al., 2018; Efken et al., 2016; Golden et al., 2018; Patermanna et al., 2018; Philp, 2018; Ronzon et al., 2017; Ronzon et al., 2018; Scarlat et al., 2015; Bugge et al., 2016; Pavone et al., 2017; Lewandowski, 2017; Filho et al., 2018; Schütte, 2018; Thorenz et al., 2018; Wozniak et al., 2018 (describing and analysing bioeconomy) Besides scientific papers

³ In this study these countries are analysed, and they are called BIOEAST countries.

several policy documents, law proposals have been published, among others by the European Commission (EC)⁴ or the OECD⁵. The research findings and the policy papers are considered widely spread and available (lots of them are open access) thus the authors do not go into general details, do not list the stages of the evolution of these research fields, they only intend to stress that similarities and differences among the abovementioned concepts are still ambiguous and name their preference for definitions.

Concerning CE one of the most comprehensive definitions is the one created by Kirchherr and his colleagues. Circular economy is an „economic system that replaces the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers”. (Kirchherr et al., 2017) Concerning bioeconomy we use the definition of the European Commission: „The bioeconomy encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy”. (EC, 2017:31) At the same time we draw the attention to the article written by Bugge et. al. who identified three visions – the bio-technology, the bio-resource and the bio-ecology vision of bioeconomy. (Bugge et al., 2016: 9) Key characteristics of these visions are listed in Table 1.

The term ‘sustainable bioeconomy’ has been introduced as well. The 4th SCAR foresight exercise by the European Commission used it and described its key principles: food first approach, sustainable yields, cascading approach and circularity. (See Kovács et al., 2015 for details).

Although the concept of circular economy and bioeconomy are different, they complement each other as both intend to improve resource and eco-efficiency, create low GHG footprint, reduce the demand for fossil carbon and enhance waste and side streams. Thus, at the intersection of bioeconomy and circular economy (see Figure 1.) there is ‘Circular Bioeconomy’. (EC, 2017).

⁴ For further details see the websites of the EC on circular economy (http://ec.europa.eu/environment/circular-economy/index_en.htm; https://ec.europa.eu/commission/publications/european-commission-proposals-circular-economy_en) and on bioeconomy. <https://ec.europa.eu/research/bioeconomy/index.cfm?pg=library>, see.e.g. EC, 2012; EC, 2013; EC, 2014; EC, 2017; Spatial Foresight, SWECO, ÖIR, t33, Nordregio, Berman Group, Infyde, 2017

⁵ e.g. McCarthy et al., 2018; OECD, 2009; OECD, 2018; Website of Bio-based economy (<http://www.oecd.org/sti/biotech/bio-basedeconomy.htm>)

Table 1. Key characteristics of the bioeconomy visions.

	The Bio-Technology Vision	The Bio-Resource Vision	The Bio-Ecology Vision
Aims & objectives	Economic growth & job creation	Economic growth & sustainability	Sustainability, biodiversity, conservation of ecosystems, avoiding soil degradation
Value creation	Application of biotechnology, commercialisation of research & technology	Conversion and upgrading of bio-resources (process oriented)	Development of integrated production systems and high-quality products with territorial identity
Drivers & mediators of innovation	R & D, patents, TTOs, Research councils and funders (Science push, linear model)	Interdisciplinary, optimisation of land use, include degraded land in the production of biofuels, use and availability of bio-resources, waste management, engineering, science & market (Interactive & networked production mode)	Identification of favourable organic agro-ecological practices, ethics, risk, transdisciplinary sustainability, ecological interactions, re-use & recycling of waste, land use, (Circular and self-sustained production mode)
Spatial focus	Global clusters/Central regions	Rural/Peripheral regions	Rural/Peripheral regions

Source: Bugge et al., 2016

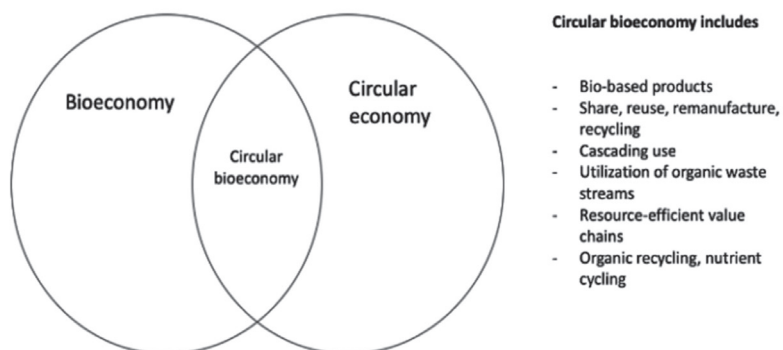


Figure 1. Circular bioeconomy

Source: EC, 2017.

Bioeconomy in the BIOEAST countries

As regards the bioeconomy's importance in the EU there is a state of the art study published by Ronzon et al. in 2018 who made a state of play assessment by using data compiled in the JRC Bioeconomics dataset⁶. The assessment is considered a complex

⁶ Bulk download is available at <https://datam.jrc.ec.europa.eu/datam/perm/od/jrc-datam-biomass-estimates/download>; infographics is available at <https://datam.jrc.ec.europa.eu/datam/mashup/BIOECONOMICS>

task as according to the official statistical classification of economic activities of the European Community (NACE rev. 2.) the economic activities are not divided into bio-based or non-bio-based activities. Thus, certain sectors include both. In case of these so-called 'hybrid' sectors⁷ it is a major requirement to measure the extent to which a given hybrid sector is bio-based. The methodology to quantify the sectoral bio-based shares is described by Ronzon and his colleagues. (Ronzon et al., 2018) As a result, this study covers key socioeconomic indicators, clustering of EU member states and heat map of the sectoral contribution to bioeconomy jobs and value added. In a nutshell the following can be summarized: The EU-28 bioeconomy employed 18 million people (8.2% of the labour force) and generated 2.3 trillion of turnover or 620 million of value added (4.2% of the EU-28 GDP) in 2015. About two thirds of the value added and turnover of the bioeconomy and three quarters of bioeconomy employment are generated by agriculture and the manufacture of food, beverages and tobacco. Sectoral contributions vary, however, according to the degree of labour intensiveness of the sector. Using some socioeconomic indicators, the authors proposed a typology based on the concentration of national labour markets into the bioeconomy (as a proxy for the employment situation) and apparent labour productivity of the bioeconomy (as an indicator reflecting economic growth potential) and created 4 groups – Group 1 'Eastern Member States, Portugal and Greece', Group 2 'Baltic and Central Member States', Group 3 'Western Member further States', and Group 4 'Northern Member States' (further details see Ronzon et al, 2018, p. 7–15)

The BIOEAST countries which are in the focus of this study belong to the first and second group. (Table 2) Bulgaria, Croatia, Poland and Romania are part of the first group defined by a strong specialisation of national labour markets in the bioeconomy and a level of apparent labour productivity of the bioeconomy below half the EU-28 level and the Czech Republic, Hungary, Slovakia and Slovenia are part of the second group defined by a medium specialisation of national labour markets in the bioeconomy on the EU-28 scale and a level of apparent labour productivity of the bioeconomy of between half the EU-28 level and the EU-28 average level. (Ronzon et al.2018).

⁷ Agriculture (A02 Forestry, A03 Fishing and aquaculture, A032 Aquaculture, A031 Fishing); Manufacture of food, beverages and tobacco (C10 Manufacture of food, C11 Manufacture of beverages, C12 Manufacture of tobacco); Manufacture of bio-based textiles (C13 * Manufacture of bio-based textiles, C14 * Manufacture of bio-based wearing apparel, C15 Manufacture of leather); Manufacture of wood products and furniture (C16 Manufacture of wood products, C31 * Manufacture of wooden furniture, C17 Manufacture of paper); Manufacture of bio-based chemicals, pharmaceuticals, plastics and rubber (excluding biofuels) (C20 * Manufacture of bio-based chemicals (excluding biofuels), C21 * Manufacture of bio-based pharmaceuticals, C22 * Manufacture of bio-based plastics and rubber); Manufacture of liquid biofuels (C2014 * Manufacture of bioethanol, C2059 * Manufacture of biodiesel, D3511 * Production of bioelectricity) - *hybrid sector (Ronzon et al., 2018).

Table 2. Heat map of the sectoral contribution to bioeconomy jobs and value added in selected EU Member States, 2015

	Group 1												Group 2											
	RO			BG			PL			HR			SI			HU			CZ			SK		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	H	H	L	L	H	L	H	L	L	H	L	L	H	H	L	L	H	L	L	H	L	L	H	H
Agri-culture	L	H	L	H	H	L	L	H	L	H	H	L	H	H	L	L	L	L	H	H	L	H	H	L
Forestry	L	H	H	L	L	L	L	L	L	H	H	L	L	L	H	N	L	N	N	L	N	L	L	N
Fishing + Aqua-culture	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L
Manu-facturing food, beverages tobacco																								

Note: hybrid sectors are not included only fully bio-based sectors

- 1. Proportion of persons employed in the bioeconomy (%)
 - 2. Proportion of bioeconomy value added (%)
 - 3. Apparent labour productivity (1000 EUR/persons employed)
- H: contribution above the EU average, L: contribution below the EU average., N: no data

Source: own compilation based on Ronzon et al, 2018.

In the period between 2008 and 2015 there was a decreasing trend in the number of people employed in agriculture; forestry; fishing and aquaculture; food, beverages, tobacco (Figure 2) in the BIOEAST countries.

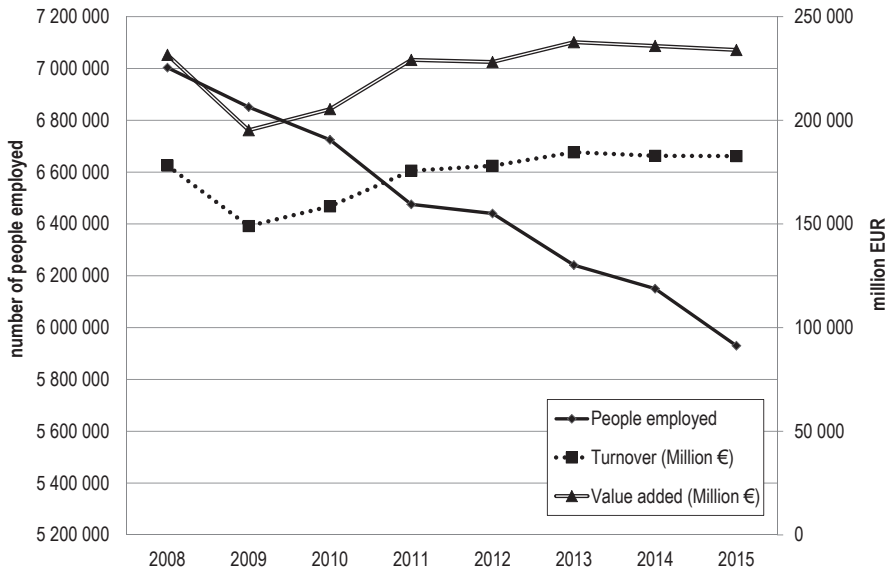


Figure 2. Development of jobs, turnovers, value added in selected sectors – agriculture, forestry, fishing and aquaculture, food, beverages and tobacco – of the bioeconomy in the BIOEAST countries

Source: own composition based on JRC Bioeconomics dataset.

As regards turnover and value added generated by these sectors there was a decline in both from 2008 to 2009 due to the global financial and economic crisis, followed by a recovery. In 2012 the level of turnover reached the level measured in 2008, and in 2013 the level of value added came close to the level measured in 2008. (Further details see Annex 1 and 2).

The apparent labour productivity (calculated by using the JRC Bioeconomics dataset) increased from 2008 to 2015 in almost all countries and sectors analysed. The degree of improvement is, however, different among the countries. The sectoral levels of apparent labour productivity show very wide ranges of variation at the level of the BIOEAST countries. (For details see Figure 3).

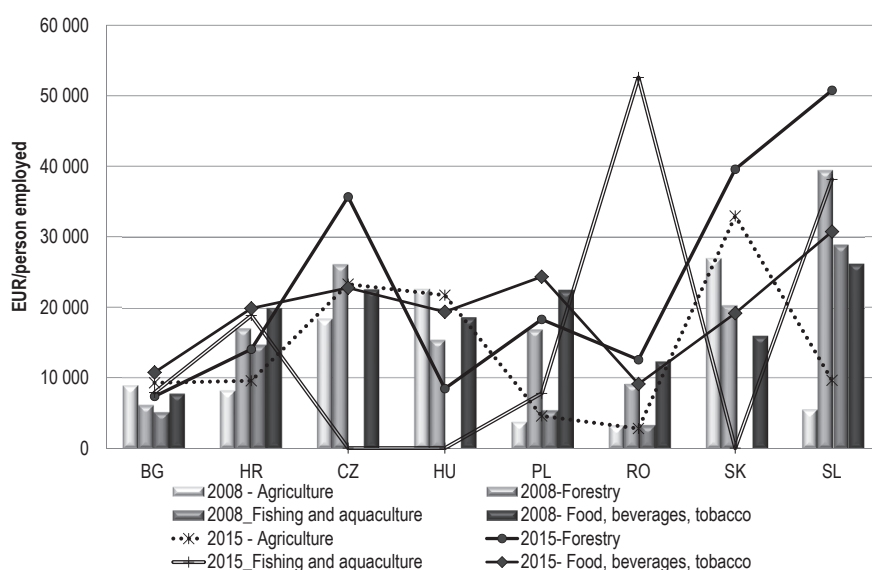


Figure 3. Apparent labour productivity in the BIOEAST countries

Note: There is no available data on labour force working in the fishing and aquaculture sector in CZ, HU and SK, thus apparent labour productivity cannot be calculated.

Source: own calculation and composition based on JRC Bioeconomics dataset.

Results of the BIOEAST survey

Regarding respondent demographic, out of 141 complete responses there were 24 (17%) given by stakeholders of businesses, industry or SMEs/start-ups, 80 (56.7%) by academic or research sector and 37 (26.2%) by public sector or NGO stakeholders. A greater number of responses were received from Hungary, Czech Republic, Bulgaria and Romania. The total number of respondents and relative proportions of stakeholder groups are listed in Table 3.

Most companies operate in the energy (45%), agriculture (37%) and environmental protection (29%) sectors. The academic activities of the respondents are principally related to agriculture (30%), environmental studies 15% and bio-sciences (14%). The majority of the third stakeholder group is employed by Governmental Agencies or Bodies (32%) and NGOs (29%).

The majority of business activities of the 'Business' sector's respondents are related to biomass production (37%), R&D service and consulting (37%) and biomass conversion (29%). Their activities focus primarily on animal feed (25%), food products (17%), advanced bio-based materials: chemicals, pharmaceuticals (12.5%), advanced liquid biofuels (12.5%) and liquid biofuels (12.5%). The biomass production activity focuses

mainly on forestry products and energy crops. Among the R&D and consulting activities there are the knowledge transfer (29%), the process design (29%) and the education and training (25%) to mention.

Table 3. Responses to BIOEAST Survey by stakeholder group and region

	Business or Industry or SME/start-up	Academic or Research	Public Sector or NGO	Total	Percent
Bulgaria	4	13	3	20	14,2
Croatia	1	3	2	6	4,3
Czech Republic	0	14	12	26	18,4
Hungary	14	19	12	45	31,9
Poland	0	8	0	8	5,7
Romania	3	14	3	20	14,2
Slovakia	1	8	2	11	7,8
Slovenia	1	1	3	5	3,5
Total	24	80	37	141	100,0

In the academic and research sector the respondents' departments perform research principally covering horizontal topics (34%) such as economics of the supply chain (22%), sustainability and climate change (18%), impact assessment of life cycle analysis (15%). Most departments study agricultural residues (18%), conventional arable crops (14%), energy crops (14%), wastes of livestock/dairy sector (11%) or forestry products, residues (10%).

The focus of the organizations in the public sector is on agriculture (12%), research and innovation (12%), biomass (11%), environmental protection (10%), policy (10%), sustainability (10%), waste and management (10%). Their activity involves mainly R&D service and consultancy, and biomass production.

The companies involved in the biomass supply chain see bottlenecks preventing the production of advanced bio-based materials and fuels mostly at the following steps of the supply chain: conversion technology (37%), economics of process (29%) and standardisation and labelling (29%). As start-up companies or R&D/consulting services, the respondents would be able to provide solutions in order to move forward the production of advanced bio-based materials and fuels at the following step of the supply chain: conversion technology (29%), economics of process (25%), conversion efficiency and standardization and labelling (17%-17% respectively). Stakeholders of the research community would be able to provide solutions in order to move forward the production of advanced bio-based materials and fuels at the following steps of the supply chain: economics of process (20%), impact assessment of life cycle analysis (19%), biomass sourcing (availability) (16%), resource efficiency of the process (14%), demand for products (12%). More than 2/3 of these stakeholders is interested in cooperating with

industrial partners. Respondents in the public sector would be able to provide guidance or tool in order to move forward the production of advanced bio-based materials and fuels mostly in terms of biomass sourcing. More than 2/3 are not aware of any specific support instrument or tool in favour of the bioeconomy. Only references to bioeconomy specific support instruments provided by respondents are as follows: „H2020, JU BBI, FP7, RESTEP - Renewable Sustainable Energy Policy – Czech Republic - all RES applicants – www.restep.cz, Support on behalf of National Government regarding to the national strategy and special financial sources, Various calls for proposals supported by EU Structural Funds to support research and development, innovation, implementation of new technologies, demonstration plants”. 80 percent of the respondents would like to work together and assist industrial and/or academic stakeholders.

In terms of what is the most beneficial for the CEE macro region in developing the bioeconomy there are both similarities and differences to be observed depending on the answers of the different stakeholder groups. On the whole, the main feedstock for bioenergy/biorefinery purposes is considered the agricultural residues which is followed by, energy crops, forestry residues, conventional arable crops, algae, forestry products, and industrial products. All three stakeholder groups think that agricultural residues could be the main feedstock for bioenergy/biorefinery purposes. On behalf of the academic and public sectors wastes of livestock/dairy sector, industrial wastes or by-products come as second and third in their ranking, the business sector, however, named - instead of the abovementioned – the forestry residues and the energy crops (Figure 4).

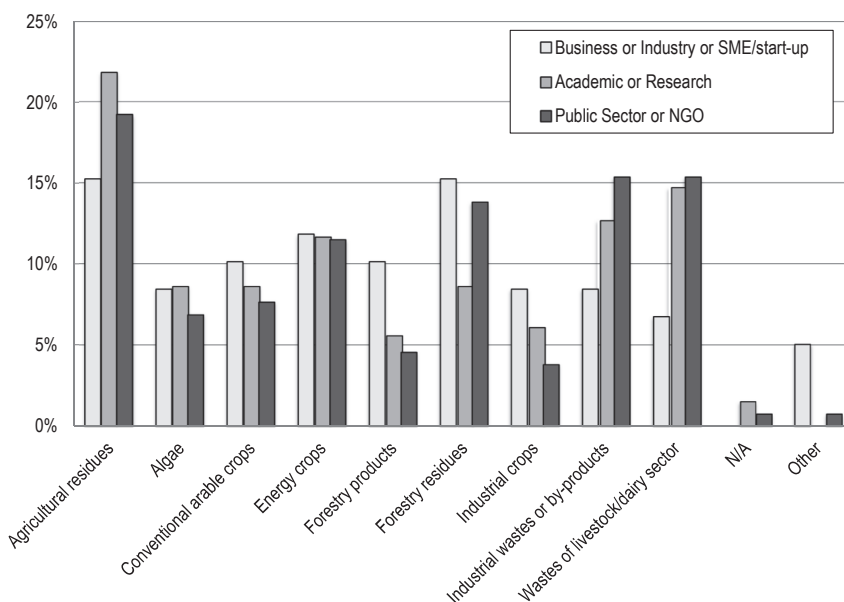


Figure 4. Main feedstocks for bioenergy/biorefinery purposes by stakeholder groups (expressed as a percentage of the total number of answers given by the individual stakeholder groups)

The respondents pointed out some missing elements hindering the region to become competitive and listed their main opportunities, as well. As for the former half of all respondents considered the lack of financial possibilities the major missing element followed by not suitable policy framework (43%), lack of industrial interest (36.9%) and lack of cooperation networks (36.2%). With regard to the latter more than half of all respondents referred to biomass potential as main opportunity, followed by creation of cooperation networks (36.9%), exploitation of geographical location (34.8%) and establishment of adequate research infrastructure (34.8%).

In terms of identification of wished interventions, which are supposed to support growth in the bioeconomy, the following results were obtained. 'Counteracting the resistance to change', 'knowledge exchange' and 'resource mobilisation' were deemed the most important innovation system functions⁸ according to all BIOEAST countries, and within them according to V4 countries, too. The least important 'knowledge development' was addressed only by Slovakia and Romania. Among individual interventions 'providing access to financial support' played the leading role, followed by 'furthering academia to business collaboration', 'building investor confidence in bioeconomy', 'ensuring continuity of policy' and then by 'championing utilization of local resources' and 'raising public awareness of bio-based products.' (Table 4).

Table 4. Interventions presented in the survey grouped by innovation system function and the top five selected as most important by respondents from BIOEAST countries

Category	Intervention	CZ	PL	HU	SK	BG	CR	RO	SI
I. Knowledge development (R&D)	1. Easy access to pilot facilities				x			x	
II. Knowledge exchange	1. Further academia to business collaboration	x	x			x	x		
	2. Develop regional networks or clusters						x		
	3. Develop international networks or clusters		x						
	4. Facilitate business to business collaboration				x				
III. Guidance of search	1. Boost engagement with policy makers		x	x					
	4. Advocate use of standardised LCA (Life Cycle Analysis)								x
IV. Market formation	1. Champion utilisation of local resources	x			x				x
	2. Create conditions for niche markets	x							
V. Resource mobilisation	1. Provide access to financial support		x	x	x	x		x	
	2. Develop a skilled workforce			x		x			
VI. Resistance to change and legitimacy	1. Build investor confidence in the bioeconomy			x	x		x	x	
	2. Ensure continuity of policy			x		x	x		x
	3. Raise public awareness of bio-based products	x					x		x
	4. Promote demonstration of technologies and products	x							x
VII. Entrepreneurial activities	1. Focus more on industrial demands in RDI strategies							x	
	3. Include business modelling and market perspective into research projects					x		x	
	4. Promote open innovation approaches		x						

⁸ Innovation system functions as defined by Hekkert et al., 2007 („The goal of any innovation system is to generate and diffuse innovations which lead to technological change.” Hodgson et al., 2016).

By comparing this result (Table 5) with that gained by Hodgson and his colleagues who analysed France, Germany, Italy, Spain and Great-Britain, it is obvious that the most important innovation function for these countries is also ‘counteracting the resistance to change’, followed by ‘guidance of the search’ and ‘resource mobilisation’. There is, however, a difference in the ranking of individual interventions in these old Member States compared to BIOEAST countries. Their priority is ‘building investor confidence in bioeconomy’ followed by 4 equally weighted interventions: ‘providing access to financial support’, ‘ensuring continuity of policy’, ‘stimulating industrial symbiosis’ and ‘promoting demonstration of technologies and products’ (Hodgson, 2016).

Table 5. Ranking of interventions grouped by innovation system function based on their perceived importance in certain old Member States and in BIOEAST countries

Category	Intervention	FR, DE, IT, ES, UK*	BIOEAST countries
I. Knowledge development (R&D)	1. Easy access to pilot facilities		4.
	2. Establish knowledge of best conversion routes for biomass type	3.	
	3. Identify and address knowledge gaps	4.	
II. Knowledge exchange	1. Further academia to business collaboration	3.	2.
	2. Develop regional networks or clusters		5.
	3. Develop international networks or clusters		5.
	4. Facilitate business to business collaboration		5.
III. Guidance of search	1. Boost engagement with policy makers	4.	4.
	2. Stimulate industrial symbiosis - sharing of resources	2.	
	4. Advocate use of standardised LCA (Life Cycle Analysis)		5.
IV. Market formation	1. Champion utilisation of local resources		3.
	2. Create conditions for niche markets		5.
V. Resource mobilisation	1. Provide access to financial support	2.	1.
	2. Develop a skilled workforce	4.	4.
VI. Resistance to change and legitimacy	1. Build investor confidence in the bioeconomy	1.	2.
	2. Ensure continuity of policy	2.	2.
	3. Raise public awareness of bio-based products	4.	3.
	4. Promote demonstration of technologies and products	2.	4.
VII. Entrepreneurial activities**	1. Focus more on industrial demands in RDI strategies		5.
	2. Develop start-up incubation programs with bioeconomy focus		4.
	3. Include business modelling and market perspective into research projects		5.

Note: * based on Hodgson et al., 2016:512; ** VII. Entrepreneurial activities were not included in the study by Hodgson et al.

Source: Hodgson et al., 2016 and own research

The importance of individual interventions in the BIOEAST countries seems to differ among the stakeholder groups, as it is visible in Table 6.

Table 6. Interventions presented in the survey grouped by innovation system function and the top five selected as most important by respondents of the three stakeholder groups

Category	Intervention	Business or Industry or SME/start-up	Academic or Research	Public Sector or NGO
II. Knowledge exchange	1. Further academia to business collaboration		x	x
III. Guidance of search	1. Boost engagement with policy makers	x		x
IV. Market formation	1. Champion utilisation of local resources			x
	2. Create conditions for niche markets	x		
	3. Build stakeholder consensus on how best to develop bioeconomy		x	
V. Resource mobilisation	1. Provide access to financial support	x	x	
VI. Resistance to change and legitimacy	1. Build investor confidence in the bioeconomy		x	x
	2. Ensure continuity of policy	x		x
	3. Raise public awareness of bio-based products	x		
VII. Entrepreneurial activities	1. Focus more on industrial demands in RDI strategies		x	

The interventions ‘furthering academia to business collaboration’ and ‘building investor confidence in bioeconomy’ are equally important for the Academic or Research and the Public sector. The interventions ‘boosting engagement with policy makers’ and ‘ensuring continuity of policy’ are equally weighted by the Business and the Public sector. The intervention ‘providing access to financial support’ was highlighted by the Business and the Academic sector. The remaining interventions were selected as most important only by one of these stakeholder groups.

There are only a few interventions where the difference between stakeholder groups seems to be rather considerable (Figure 5). In these cases - ‘improving access to pilot facilities’, ‘furthering academia to business collaboration’, ‘developing regional networks and clusters’, ‘championing utilization of local resources’, ‘developing start-up incubation programs with bioeconomy focus’ and ‘promoting open innovation approaches’ – the perceived importance is higher for the academia than for the business sector and it is the highest in the public sector.

The comparison of BIOEAST countries show that the difference in the perceived importance of intervention is not significant in most cases. (Figure 6).

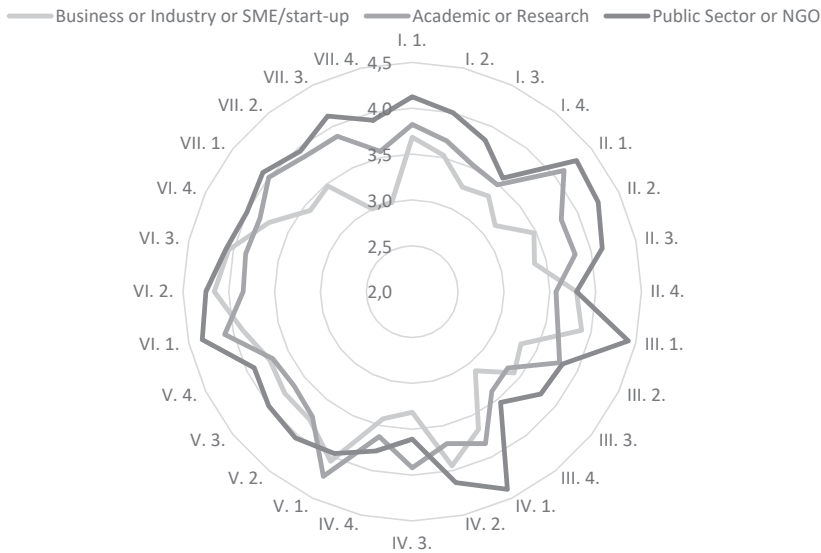


Figure 5. Difference in perceived importance of interventions among stakeholder groups (1=Least beneficial - 5=Most beneficial)

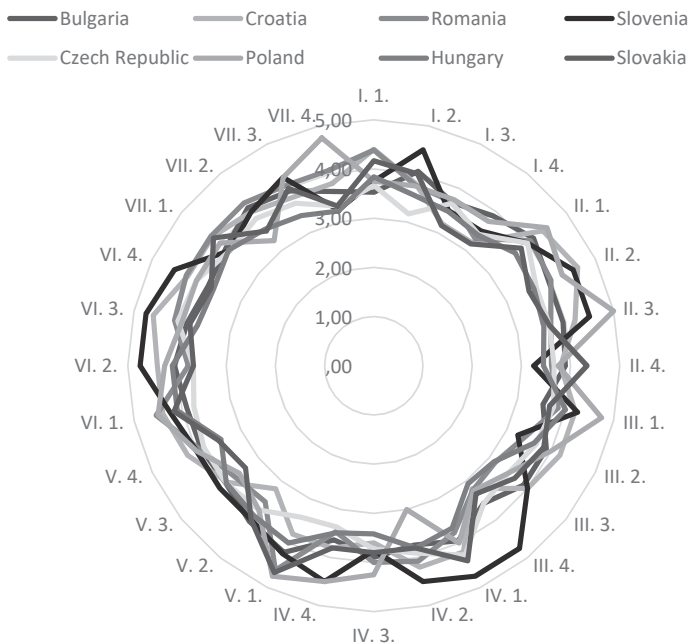


Figure 6. Difference in perceived importance of interventions among BIOEAST countries (1=Least beneficial - 5=Most beneficial)

Discussion

The information gained from the BIOEAST survey firmly confirms on the one hand the low level of bioeconomy maturity – i.e. their potential in terms of employment, creation of value added or apparent labour productivity etc. is not fully exploited⁹ – and on the other hand the strong willingness of the different stakeholder groups to cooperate. As for the latter an effective regional cooperation - based on a faster development and adaption of scientific and technological advances in the primary sectors (agriculture, aquaculture, forestry) – requires well-established networks, the development of capacities, skills, clear identification of problems and developing strategies which can be put efficiently into operation. Further suggestive results – in terms of what are (1) the missing elements hindering competitiveness in the bioeconomy, (2) the opportunities to raise competitiveness, (3) most important innovation system functions, (4) major bottleneck in the supply chain – which at the same time verify and strengthen the objectives of the BIOEAST Initiative are listed in Figure 7 where it is indicated which objectives are supported by them. The objectives are as follows:

- „Objective 1: Initiate cooperation and the development of knowledge-based policies: establish a multi-stakeholder network and cluster at European level to facilitate joint actions, backed up by a renewed commitment to closer cooperation at both the political and operational levels through close personal contacts and communication between the countries concerned at the operational level;
- Objective 2: Identify common challenges and validate common research topics: map specific challenges for a Strategic Research and Innovation Agenda and foster innovative multidisciplinary research and cooperation activities. These should address the relevant common CEE challenges by means of common work carried out by experts as a follow up to the Visegrad4+3 Common Declaration as a starting point for the discussion;
- Objective 3: Initiate strategies: create a cross-sectorial approach for the development of a national circular and bioeconomy strategy;
- Objective 4: Provide an evidence base: establish data-driven support for implementation of policies through the creation of an interoperable, fully integrated observing and forecasting system. This would promote continuous, long-term observation based on open data structures to guarantee easy access;
- Objective 5: Improve skills: train a new generation of dedicated multi-stakeholder actors;
- Objective 6: Initiate development of synergies: promote regional, national, EU and international funding opportunities to develop innovative technologies, methodologies and approaches. The purpose would be to boost the sustainable and circular

⁹ See Ronzon et al., 2017: 48.

economic growth of the European bioeconomy sectors and the conservation and upgrading of the regional environment, resources and cultural heritage;

- Objective 7: Increase visibility: draw attention to specific challenges and research potential of the macro-region, through involving society and promoting public awareness". (BIOEAST, 2018)

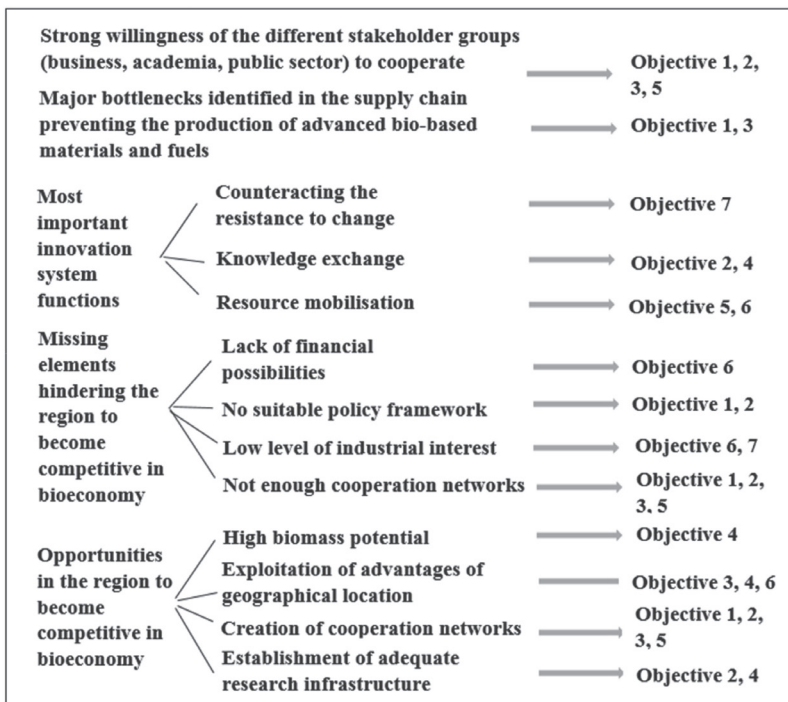


Figure 7. Findings of the BIOEAST Survey verifying the Objectives of the BIOEAST Initiative

Conclusion

The size of the sample of the research is definitely small and the lack of representativeness lead to further questions. Despite methodological difficulties we can state - even at this first stage of research and following in Hodgson and his colleagues' footsteps- that innovation system frameworks were proven to be able to provide a better understanding of the drivers of bioeconomy, a thought provoking assessment of perceptions on policy interventions, and useful implications for policymakers both by counties and by academic, business and policy stakeholder groups. Thus, this kind of research ought to be carried out on a regular basis. Further results and implications could support our society in embracing sustainable bioeconomy and contribute to regional collaboration of triple-helix stakeholders.

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Annex 1: People employed, value added, turnover in the bioeconomy

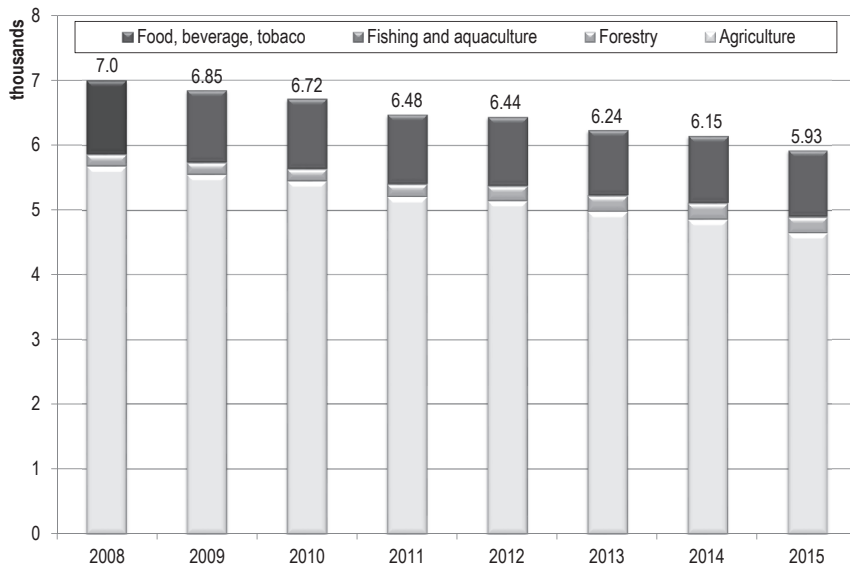


Figure 1. Development of the number of people employed by selected sectors (total number of people employed in the BIOEAST countries)

Source: own composition based on JRC Bioeconomics dataset.

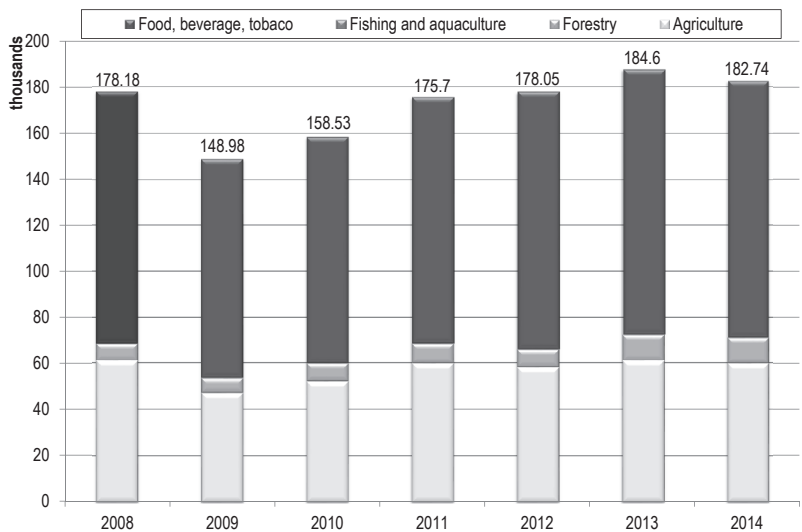


Figure 2. Development of sectorial turnover in the bioeconomy (million EUR) by selected sectors in the BIOEAST countries

Source: own composition based on JRC Bioeconomics dataset

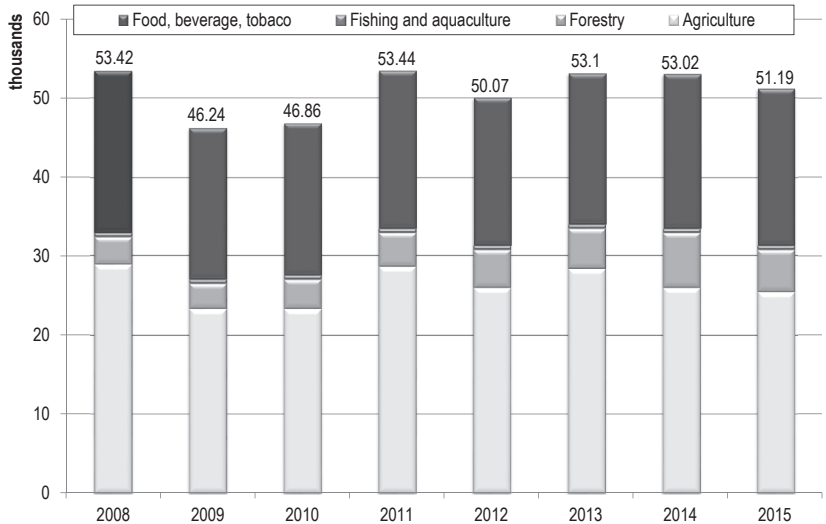


Figure 3. Development of sectorial value added in the bioeconomy (million EUR) by selected sectors in the BIOEAST countries

Source: own composition based on JRC Bioeconomics dataset.

Annex 2: Development of the number of people employed by selected sectors (total number)/ turnover (million EUR) and value added (million EUR) in the bioeconomy (2008, 2012, 2015)

		BG	HR	CZ	HU	PL	RO	SK	SL
Agriculture		People employed							
	2008	224 600	207 600	125 000	150 500	2 139 700	2 635 700	70 700	80 100
	2012	168 100	172 700	115 100	173 200	1 878 400	2 498 100	55 100	73 200
	2015	177 300	127 700	114 200	178 800	1 768 600	2 129 600	57 900	60 100
		Turnover							
	2008	3 865	2 946	4 607	7 219	21 167	16 683	2 147	1 147
	2012	3 891	2 607	4 640	6 977	22 578	13 001	2 155	1 131
	2015	3 667	1 935	4 445	7 442	21 709	13 822	1 894	1 257
		Value Added							
	2008	2 020	1 715	2 291	3 427	8 216	8 731	1 917	448
	2012	1 724	1 330	2 658	3 600	9 154	5 668	1 783	443
	2015	1 642	1 220	2 657	3 879	8 064	5 910	1 907	578
Forestry		People employed							
	2008	25 000	13 000	30 900	12 600	60 500	49 100	25 400	4 500
	2012	19 300	14 400	32 000	19 000	73 600	56 600	20 300	3 400
	2015	28 600	15 100	30 100	25 300	72 700	51 600	18 400	4 000
		Turnover							
	2008	408	331	1 884	407	3 947	760	679	279
	2012	572	331	2 324	452	2 602	1 355	734	366
	2015	741	303	2 209	488	5 241	1 930	786	402
		Value Added							
	2008	157	222	812	194	1 023	455	522	178
	2012	176	211	1 110	210	1 160	530	566	199
	2015	210	212	1 073	214	1 328	647	728	203
Fishing and Aquaculture		People employed							
	2008	1 921	6 782	0	0	8 609	3 544	0	138
	2012	1 995	6 779	0	0	8 184	3 439	0	141
	2015	2 652	7 298	0	0	10 255	2 894	0	139
		Turnover							
	2008 13		126	0	0	111	15	0	3
	2012 15		125	0	0	164	19	0	2
	2015 22		134	0	0	138	23	0	2
		Value Added							
	2008	10	100	18	15	47	12	5	4
	2012	13	128	26	16	60	34	2	4
	2015	21	137	23	15	80	152	37	5
Food, Beverages, Tobacco		People employed							
	2008	110 696	68 373	125 239	111 303	445 337	208 537	40 029	17 845
	2012	97 346	65 127	115 725	104 090	422 246	187 037	40 003	15 899
	2015	98 611	61 722	116 887	107 914	423 197	182 514	39 488	16 468
		Turnover							
	2008	5 209	5 700	15 221	12 013	52 584	12 382	4 074	2 259
	2012	5 560	5 597	14 331	11 985	56 903	11 203	4 491	2 148
	2015	6 077	5 481	13 407	11 979	58 512	12 257	4 227	2 212
		Value Added							
	2008	862	1 374	2 843	2 058	10 070	2 566	636	469
	2012	949	1 259	2 729	1 781	9 332	2 001	772	446
	2015	1 059	1 224	2 659	2 087	10 291	1 661	756	506

Note: '0' means there is no available data in the dataset.

Source: own composition based on JRC Bioeconomics dataset. <https://datam.jrc.ec.europa.eu/datam/perm/od/jrc-datam-biomass-estimates>

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USE OF SIX SIGMA FOR QUALITY ASSURANCE IN THE ARMS INDUSTRY

The purpose of this paper is to present military applications of the quality assurance method called Six Sigma. This method is applied worldwide to manage quality. It is used by major global enterprises including those producing goods for military purposes. One of its greatest users is the Army of the United States of America as well as other national armies. Six Sigma is part of strategies used in enterprise management, in which quality is perceived as a crucial factor in improvement of competitive market advantage as well as a solution enabling confrontation with emerging threats. Functioning of an army is connected not only with activities related to military operations, but also with purchase of military equipment and other goods, repairs of the equipment, health protection, data collection, transportation, and storage. Six Sigma and solutions based on experience with the method may be applied to all of these areas.

Keywords: Six Sigma, quality, arms industry.

JEL Classification Codes: O31, O32.

Introduction

A survey carried out among business entities of the Polish arms sector by P. Bartkowiak and J. Józwiak in the years 2013–2015 proved that 100% of those enterprises

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were certified for compliance with the requirements of ISO 9001 and 90% for compliance with the requirements of AQAP 2010 (see Bartkowiak, Jóźwiak, 2017). Thus, establishment of a quality management system has become a standard with enterprises manufacturing military goods. As the authors indicate after R. Wolniak (see Wolniak, 2014), such a situation forces enterprises to follow the path of continuous improvement, provided that they search for unique factors helping to gain competitive advantage.

Enterprises improve their quality management systems in order to achieve specific benefits present in three areas: financial, organizational (improvement of a management system), and the market (improvement of a company's standing) (see Wolniak, 2014). Publications concerning quality management emphasise the leading role of the management in achievement of quality goals. Global and local competition force business leaders to create changes and guide development as, due to their knowledge and skills, they are better prepared for any kind of changes both in an enterprise and in its environment (see Karaszewski, 2001).

Enterprises which implement the quality management standard ISO 9001 employ the term „process approach”, meaning a systematic identification of processes applied in an organization together with management of the said processes, as well as mutual connections of processes that function in the organization. Such an approach to quality management leads to a transition from the quality control stage, through the steering and quality assurance stage, to the comprehensive TQM quality management. The TQM philosophy helps organizations to achieve their goals, such as defect-free production and full satisfaction of customer needs and demands. Striving towards constant improvement of the processes, minimization of their variability, maximum possible savings on improvement of the quality of goods, may encourage management to apply the Six Sigma method (see Kaźmierczak, 2002).

1. Using Six Sigma in the arms industry

To begin with, Six Sigma was used to improve quality in the manufacturing industry. The success achieved by enterprises was noticed by the education, health care and services sectors. National administration was the last sector to show interest in the potential of Six Sigma, given the entrenched bureaucracy, reluctance to change, no need to compete in the market, and facility to hide losses (see Smith, 2017).

Studies confirm that Six Sigma is the most important factor in development of major enterprises operating in the territory of the United States of America and Europe. The method is most commonly applied in the automobile and aviation industries. It may be said this is a standard among the key sub-suppliers to these sectors (see Tyszkiewicz, 2016).

Fortune 500 list of the leading enterprises covers five American companies manufacturing goods for arms purposes: Boeing (ranking 24), Lockheed Martin (ranking 26),

General Dynamics (ranking 90), Northrop Grumman (ranking 114), and Raytheon (ranking 116) (Fortune 500, 2017). The British BAE Systems is the largest enterprise of this kind beyond the US, whose arms production profits place it third in the world (see Bhushan Dhiraj, 2017). Six Sigma figures large among the quality assurance systems in all these organizations.

A segment of Boeing produces arms goods: aircrafts, missiles, and rockets. At the beginning of the 1990s, the Lean Manufacturing rules were intensely introduced there. Not until the end of the 1990s were they supplemented with Six Sigma initiatives. Six Sigma in Boeing does not have a corporate mandate, however, it is perceived as one of the most important elements for the company's competitiveness. The monthly corporate bulletin (Boeing Frontiers) publishes articles about Six Sigma and stories of successful improvements (see Marx, 2017).

Global armament concerns introduce Six Sigma in order to improve their effectiveness and reduce costs. This method has been successfully used to improve business processes by Lockheed Martin since 1990. In recent years, potential of Six Sigma has been noticed and now the method is also used for assurance of business sustainability. Application of Six Sigma helps to enhance strengths of an organization and to pursue its strategy and high level management is aware that respect and support for employees, society and environment are keys to success of a company. Six Sigma projects in Lockheed Martin are carried out in the following areas of interest:

- Operation efficiency – costs in this area have been decreased by 20% due to reduction of space occupied and thus of consumed energy and other resources;
- Use of resources – since 2010, water consumption and CO₂ emissions have been cut by approx. 20%. Moreover, quantities of materials landfilled have fallen by 36% and consumption of energy dropped by 12%;
- Product manufacturing – the knowledge that creation of new products leads to changes in the environment resulted in cooperation with other entities seeking alternative energy sources, methods of waste disposal and problem solving connected with the climate change;
- Contacts with suppliers – transparency is the basic parameter. Improvement of decision making processes allowed for introduction of higher standards of social and business dealings with the company's partners (see Zell, 2017).

General Dynamics offers the following ranges of goods: sea systems, fight systems, information and technology and aerospace. Lean Six Sigma methodology was to force the company to show greater flexibility in the changing market. The following factors led to the introduction of Six Sigma:

- immunizing the company to the decline in prices;
- growing pace of improvement in quality and efficiency compared to the competition in order to become the most efficient rival in the market;

- establishing a universal language and approach in the entire area of business interest of the company;
- developing the next generation of leaders;
- problem-free realization of orders giving satisfaction to the customers;
- measurable financial benefits;
- positive and deep cultural changes and engagement in constant improvement of all key business goals (see Quality Toolbox-Tools & Techniques, 2017).

Six Sigma in Northrop Grumman is one of the pillars of its quality assurance programmes (see Quality Assurance Program, 2017) applied in order to satisfy the customer. The said programmes use the best standards and practices available in the industry and aim to provide highest quality products and services. Application of Six Sigma in order to improve functioning of processes and reduce aberrations is to significantly contribute to increased effectiveness and improved quality, at the same time reducing waste. By means of statistical methods using data from descriptions, measurements and analyses, improvement and monitoring of crucial business targets becomes possible. The approach towards the improvement systematized by the DMAIC methodology gives employees extra motivation and satisfaction from their work (cf. Quality Assurance Program, 2017).

The high rank attained by Six Sigma method at Raytheon is proved by the fact that individual frameworks were created for it and it was given its own name (R6σ®). Six Sigma is a business strategy of Raytheon for the benefit of constant improvement. It considers all aspects of enterprise functioning – processes, employees, suppliers, customers, and partners. Its role is to boost efficiency, provide positive impact on the business, and satisfaction to its customers. It was introduced in 1998 as a combination of the experience of Six Sigma classic approach originating from Motorola and the Lean aspects implemented by Toyota. Consideration given to needs of the customer and implementation of the organizational culture, elimination of losses, limitation of process variability, and engagement of employees are very important in this consolidated attitude. A standard introduced to Raytheon will support achievement of goals, reduce risk and contribute to improvement of products and services, provide each employee with tools and resources necessary to create value in this field. Any information obtained at every R6σ stage assists the team with changing their way of thinking, leads to improvement of the efficiency and achievement of considerable effects. Engineering solutions and R6σ in a company mutually inform and supplement each other. Engineering personnel is obliged to reduce costs, maintain efficiency, improve results, and limit the variables influencing stability of the process. In this area, R6σ provides IT, analytical and project solutions which make products and processes profitable. Engagement in the participation in the R6σ projects supports careers and personal development of employees (see Technology Today, 2017). Individuals with skills gained during realization of the projects, with knowledge of the R6σ concept and additionally leadership and

management skills, experience, and absence of fears related to introduction of changes are potential candidates for managerial positions. Thanks to such an attitude, leadership of a company is strong and experienced in application of constant improvement tools as well as engaged in continuous improvement processes.

The philosophy of BAE Systems concentrates on achievement of goals by way of grounding the organizational culture not in what we are doing but how we are doing it. Such an approach enforces the highest standards in every aspect of the business. The strategy of continuous improvement was realised owing to introduction of Six Sigma, among other methods. Like in the other companies, the basic aim in BAE Systems was introduction of the methodology to solve problems (identification and elimination of defects, minimization of production process variability) allowing for improvement of processes in the strategic areas of the organization, thus in consequence, improvement of quality. Six Sigma uses statistical methods thanks to which people building its infrastructure in an organization (Champions, Black Belts, Green Belts, Yellow Belts) are able to improve processes, solve business problems, introduce innovations, and educate other employees. Each project carried out at BAE Systems is composed of a specified sequence of steps and includes quantitatively specified goals, for instance:

- shorter duration of the process cycle;
- reduction of pollution;
- cut costs;
- reduction of faulty products;
- improvement of reliability;
- elimination of activities which do not increase value;
- enhancement of customer satisfaction;
- increase of profits.

The Lean Six Sigma culture at BAE Systems is a combination of both the Lean manufacturing processes and Six Sigma methodology, implemented in 1997 as the Lean Sigma in order to protect the company's share in the air market. The implementation of the Lean Sigma programme resulted in improved efficiency, time of performance, savings and reliability and is deemed the activity which has helped BAE Systems keep its position in the global forefront of armament goods manufacturers. Moreover, a Sigma Leadership programme was established as part of the programme that constitutes a career path for individuals with a leadership potential and the ability to gain knowledge from different areas of the business (cf. White, 2017).

The above listed examples create the image of Six Sigma in the arms industry as a methodology established and being continuously improved in the international and multicultural environment combining a number of sectors and disciplines. It is another aspect confirming the strength and potential of Six Sigma.

2. Use of Lean Six Sigma in the Army of the United States

The US Army is considered to be one of the most effective organizations in the world. It is not an enterprise, however, it has a budget comparable to the top ten Fortune 500 companies. Its objective is to fight and win wars, yet it is aware that it has to introduce innovative solutions and manage the tax payers' money properly. For this reason, introduction and maintenance of management good practices is necessary, so that every dollar spent could serve improvement of combative dexterity. The Army often focuses on spending of the budget irrespective of results and without exact understanding of real costs of the spending processes. Such an attitude leads to bad business practices; the effectiveness and efficiency are not analysed. Thus, identification and management of process costs seem necessary (see Army Directive 2016-16). One of the methods supporting these activities is Lean Six Sigma.

Lean Six Sigma was for the first time introduced to the Army of the United States in 2006. Billions of dollars have been saved as a result. One of the activities designed to increase effectiveness was the expenditure of 2.8 million dollars on purchase of software used for statistical data analysis from a leading global supplier. The aim of this purchase is to help assure self-sufficiency of Lean Six Sigma techniques, generate greater profits, cut losses, and increase benefits in the future. The West Point Military Academy is an organization where a number of Lean Six Sigma trainings was provided.

The U.S. Army units that are most effective at introduction of process improvement techniques are annually honoured with Process Improvement Deployment Excellence Awards. The following units received awards in the last edition (total savings to the amount of 74.9 million dollars):

- The Office of the Assistant Secretary of the Army for Financial Management and Comptroller;
- The U.S. Army Medical Command;
- The 21st Theater Sustainment Command, U.S. Army Europe (see Lopresti, U.S. Army..., 2017).

It is worth emphasizing that thanks to participation in the Six Sigma certification process, the military personnel have a chance to develop skills necessary to apply for the most attractive jobs not only in the army but also after completion of their service. Holders of a safety certificate together with the Six Sigma certificate are very attractive work candidates for the private sector.

Six Sigma methodology applied in the army was adjusted to its specific nature and brought significant benefits for military units, the American Defence Department, and private contractors. The achievements in the field of process improvement of cost reduction gained recognition in the form of Lean Six Sigma Excellence Awards. In the last edition (see May 2017), 13 Lean programmes have been honoured. The programmes recognised allowed the U.S. Army to save millions of dollars. Detailed analysis and im-

provement of processes aiming to eliminate losses are perceived as ways to strengthen the power of the U.S. Army (cf. Lopresti, Six Sigma..., 2017). It is stressed that the improvements not only eliminate the waste of time and thus extend the training period of soldiers, but also make life simpler. Management of such factors as purchasing, logistics, health care, and human resources may be operated only with the use of modern business strategies which function in the private sector. The projects which contributed to success of the awarded units included:

- shorter training cycles;
- reduced time spent on repairs of military equipment;
- savings on purchases of products and services for the army;
- less time spent on office activities;
- less time spent on data processing;
- health protection (shorter waiting times for examinations and surgeries);
- improvements for soldiers and their families in case of a change of unit assignment.

What is important, the solutions introduced to the U.S. Army, which contribute to measurable savings, are also implemented in other units. It is especially significant from the point of view of Six Sigma's effectiveness.

A armies in different parts of the world pay close attention to improvement of processes by means of Six Sigma. In 2014, the South Korean Ministry of Defence saved 92 billion Korean won (approx. 290 million Polish zloty) thanks to introduction of 107 Lean Six Sigma projects. The following projects were distinguished:

- evacuation sideslip for Navy vessels (to be also applied to sinking and burning civil vessels),
- solution preventing engine problems in Russian T-103 training airplanes,
- improved effectiveness of military resources management,
- improved efficiency of artillery exercises,
- optimization of resource management and quality control during maintenance of the „White Shark” torpedo (see Chung, 2017).

Mikel Harry (called the „father” of Six Sigma), who created Six Sigma together with Bill Smith of Motorola, conducted consultations with the federal government of the United States on possible use of Six Sigma to improve the volume of intelligence information gathered by the U.S. in the fight against terrorism (cf. Smith, 2017).

Conclusion

Introduction of Six Sigma means introduction of a number of changes to an organization. This is not a method that could be top-down implemented by way of management, regulation or any other instruction. In order to assure its success, constant support of the highest level management must be provided.

The methodology of Six Sigma is full of solutions which must be implicitly observed. Employees with conservative attitudes will probably see in Six Sigma a threat to their status quo, whereas those open to changes will approach the idea enthusiastically and will have the possibility to affect their working environment based on any available methods and tools of quality assurance (participation in Six Sigma projects also helps in personal development of employees).

Positive effects of introduction of Six Sigma in such companies as: Boeing, Lockheed Martin, General Dynamics, Northrop Grumman, Raytheon, BAE Systems or the Army of the United States of America invite special attention to the possibility of using Six Sigma to improve quality in the Polish arms industry. The introduction of Six Sigma to national arms sector may result in improvement of the business approach as the authors of this method were driven by the idea of increasing profitability of an enterprise. Limitation of the process variability owing to Six Sigma results in financial savings and in reduction of funds allocated to quality assurance. The implementation does not have to encompass the entire organization. It may be carried out for particular processes, it may concern smaller organizational units, whereas success of some projects may positively affect other units.

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LOCAL AUTHORITIES' FUNDS AS SOURCES OF REVENUES OF THE METROPOLITAN ASSOCIATION

The objective of the study is to analyse and evaluate the legislation in force governing the sources of revenues of metropolitan associations. The statutory catalogue of the sources of revenues of metropolitan associations includes funds derived from local authorities that, to a limited extent, may be influenced by the bodies of metropolitan associations or the bodies of member municipalities. In the course of research, with the application of the dogmatic-legal method supplemented with an empirical-analytic method, the following hypothesis has been verified: a potential lack of relevance of funds, in static terms, with respect to the scope of public tasks of metropolitan associations as provided for by the Act may be adjusted jointly by their bodies and their members. The principles of the amounts and collection of subscriptions from the municipalities in the Górnośląsko (Upper-Silesian)-Zagłębiowska Metropolis, the proportion of personal-income tax receipts from natural persons residing within said municipalities, and the procedure under which subsidies are made from municipality budgets to metropolitan association budgets have been presented. It has been determined that the main source of revenues is the proceeds of personal-income tax. Subscriptions have been found to be of supplementary importance, whereas subsidies from municipality budgets have not been recorded.

Keywords: metropolitan association, metropolitan association's revenues, metropolitan association's budget.

JEL Classification Codes: H70, H71.

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Introduction

The statutory structure of a metropolitan association in the Republic of Poland has been applied since 1st January 2016. Initially, the binding law was the Act on metropolitan associations dated 9th October 2015 (hereinafter AMA), superseded by the Act on the metropolitan association in the Silesian Province dated 7th April 2017 (hereinafter AMASP). The former law was designed as a universal legal act to set forth the procedure for the establishment and the principles of operation of a larger number of metropolitan associations. The latter law, currently in force, is incidental (one-time) in nature as it stipulates the rules and the procedure for the establishment and the principles of operation of one (concrete) metropolitan association situated in the Silesian Province. The above idea was explicitly formulated by project's authors in the grounds to the draft law stating that it was dedicated to the metropolitan area that would function within the Silesian Province. At the same time, the Upper Silesian metropolitan area is one of the best developed functional areas, where regulations referring to legal forms of cooperation between local authorities have been successfully implemented².

The law in force pursues the concept of a metropolitan association as a federation of municipalities which feature strong functional relations and advanced urbanisation processes and which are located across spatially coherent areas of a relatively large total population. In the case of the metropolitan association in the Silesian Province, it has been assumed that the total number of residents should be no less than 2,000,000, whereas the previously binding law on metropolitan associations set the minimum number of residents at the level of 500,000. The doctrine highlights the fact that metropolitan associations may be effective forms of coordination and coherent management of large urban organisations and their impact zones (Jaworska-Dębska, 2017, p. 239), strengthening the capacity to perform certain public tasks (Szlachetko, Borówka, 2016, p. 94).

Pursuant to a delegation included in Article 4 AMASP, the Council of Ministers issued a regulation (Regulation dated 26th June 2017) under which a metropolitan association was created in the Silesian Province, its name and the seat of association's authorities were established, and its area and limits were delineated by listing the municipalities it would be composed of (as of 1st day of September 2018 the metropolitan association consisted of 41 municipalities, and the seat of its authorities was Katowice). Within the meaning of the Act on public finance dated 27th August 2008 (hereinafter APF), the metropolitan associations is an organisational entity in the public finance sector, whereas the provisions of the said law pertaining to local authorities apply to metropolitan associations accordingly. The fact that such a solution was adopted stems from the

²The substantiation document to the draft law on the metropolitan association in the Silesian Province – form no. 1211 of the Lower House (Sejm) of the Republic of Poland, 8th administration.

lack of separate regulations in the Act on public finance which would explicitly address metropolitan associations.

A metropolitan association is a separate legal entity that is equipped with legal personality and distinct from the local authorities which create it. The separation of a metropolitan association is determined, in statutory and other terms, by the catalogue of the public tasks it performs on its own behalf and at its own responsibility (Ofiarska, 2016, p. 35). Proper performance of these tasks requires necessary funds the value of which should correspond to the set scope of tasks. The legislator has not provided for a universal principle of relevance of means and tasks with respect to metropolitan associations. In this respect, only a residual version is available, i.e. one which accounts for potential amendments to the statutory catalogue of tasks of metropolitan associations. Pursuant to Article 45 AMASP, statutory assignment of new tasks to metropolitan associations requires a provision of funds needed for task performance by an increase in revenues. Due to the fact that a metropolitan association is not a local authority, the constitutional principle of relevance, in static terms, laid down in Article 167(1) of the Constitution of the Republic of Poland dated 2nd April 1997, may not be applied thereto. According to this principle, the share in public revenues provided by local authorities corresponds to the tasks entrusted. On the other hand, the rule presented in Article 45 AMASP is a form of reception of the relevance principle in dynamic terms, laid down in Article 167(4) of the Constitution of RP, determining that any changes in the scope of tasks and competencies of local authorities are made along corresponding changes in the distribution of public revenues.

The objective of the study is to analyse and evaluate the legislation in force governing the sources of revenues of metropolitan associations. The following hypothesis has been verified: any potential lack of relevance of funds, in static terms, with respect to the scope of public tasks of metropolitan associations as provided for by the Act may be adjusted jointly by their bodies and their members. However, due to metropolitan association's characteristic features allowing a bottom-up intervention without the need to amend the provisions of the act, adjustment is possible only with the use of some sources of revenues of metropolitan associations. The methods used in the study are dogmatic-legal and empirical-analytic (above all to present selected judgments of administrative courts with respect to the manner of managing selected sources of revenues of metropolitan associations).

General Characteristics of the Sources of Revenues of the Metropolitan Association

The legislator's intention was to make the Act on the metropolitan association in the Silesian Province complex (complete) in nature, i.e. the one which governs all areas of activities of this entity. Therefore, the law has also been fitted with regulations concern-

ing the sources of revenues of the metropolitan association. The former act on metropolitan associations did not contain any such provisions, and an attempt to address the issue was not fully successful. Suitable amendments to the Act on the revenues of local authorities dated 13 November 2003 were made by an addition of Chapter 7a entitled Revenues of metropolitan associations, subject to Article 67 AMA. Nonetheless, as the title of the above law remained the same, a discord between the law's title and the material scope thereof developed (Ofiarska, 2017, p. 234). In accordance with the act's title, it laid down local authorities' revenues only. Still, in the amended Article 1 of the same law, paragraph 2 was added, setting forth also the sources of revenues of metropolitan associations, and arranging for the level and collection of revenues. Thereby, metropolitan associations became formally included in the revenues regulation system of local authorities (Ważny, 2016, p. 225).

Following the entry into force of the provisions of the Act on the metropolitan association in the Silesian Province, the above mentioned amended provisions of the Act on the revenues of local authorities were repealed. One may think of this action in positive terms, as the metropolitan association does not have the status of a local authority, which was settled by the provisions of the Act on the implementation of a three-tier basic division of the country's territory dated 24th July 1998. Moreover, other legal acts have certain regulations introduced which list local authorities and metropolitan associations as distinct legal entities, such as Article 3 of the Act on spatial planning and spatial development dated 27th March 2003, Article 9 of the Act on public finance, Article 1 of the Act on audit offices dated 7th October 1992.

The catalogue of the sources of revenues of the metropolitan association laid down in Article 51 AMASP is composed of sources of revenues of varied nature. The list of the sources of revenues is preceded by the following phrase: „the sources of revenues of a metropolitan association are”, which indicates that the sources should be permanent, stable, predictable, and capable of detailed planning in the financial years which will follow. Nevertheless, a detailed analysis of the sources of revenues does not confirm the above assessment - at least with respect to some sources of revenues of metropolitan associations. It is difficult to refer such assessment to inheritance, bequests, donations etc. or to interest on any late payments constituting metropolitan associations revenues of episodic nature, the planning of which involves high risk.

The statutory catalogue comprises 11 types of revenue sources, but it is not exhaustive as the last item on the list is: other revenues due to it under separate regulations. In accordance with the legal position as of 1st September 2018, other provisions have not laid down any other revenues which would be due to metropolitan associations. When compared with the catalogue of the sources of revenues of metropolitan associations, which was developed by the provisions of the former law, the present catalogue of said sources remains unchanged.

We may perform a dichotomous division of the sources of revenues in the statutory catalogue into public-legal (such subsidies, the proceeds of the personal-income tax) and private-legal (such as inheritance, bequests and donations, interest on loans granted by the association). Yet, according to another criterion we may distinguish transfer-type sources of revenues (i.e. those originating from budgets of other entities (public budget subsidies, subsidies from the budgets of local authorities) and revenues generated as a result of activities of the metropolitan association and its organisational units (revenues generated by budget units of the metropolitan association and payments from budget institutions, revenues from metropolitan association assets). In addition, we may also distinguish sources of revenues of the metropolitan association originating from local authorities it comprises. These are direct receipts from local authorities (subscriptions from municipalities constituting the metropolitan association, subsidies from budgets of local authorities) and indirect receipts from local authorities (the proceeds of personal-income tax from natural persons residing within the metropolitan association).

An objection regarding indirect origins of local authorities' revenues from personal-income tax should be justified by the fact that funds from this source originate *de facto* from the residents of municipalities included in the metropolitan association, who are the taxpayers of the tax within the meaning of the Act on personal-income tax, i.e. natural persons residing within the territory of one of the municipalities listed in the Regulation of the Council of Ministers regarding the establishment of the metropolitan association in the Silesian Province. At the same time, it needs to be underpinned that the statutory term „the proceeds of personal-income tax of natural persons residing within the metropolitan association” is imprecise. Natural persons do not reside in the area of the metropolitan association but rather the areas of individual municipalities constituting the association. The area of the metropolitan association is only a total of the areas of municipalities included in the metropolitan association by the legislator. Other provisions of the same act include a proper use of the term resident or residents, for instance in Article 5(4.4), the following statement is applied: „the results of consultations with the residents of individual municipalities”, or in Article 25(2.2), it is said that „such number of delegates representing municipalities that the residents of said municipalities are the majority of the population residing in the area of the metropolitan association”.

Subscriptions From Municipalities Comprising the Metropolitan Association

The catalogue of the sources of revenues of the metropolitan association mentions subscriptions from municipalities comprising it. The principles of subscription payments and their legal structure is laid down in Article 53 AMASP. A municipality in the municipal association is subject to an obligation to make annual subscription payments. As

the obligation to make subscription payments is explicitly defined in the act, it may be concluded that the subscription is an obligatory, periodic, non-refundable cash consideration paid by a municipality for the benefit of the metropolitan association. The duty to pay subscriptions was introduced under the act by determination of the fundamental elements of the legal structure. The subscription is of a public levy-type within the meaning of Article 5(2.1) APF. The parties to the legal relation of the subscription (the obliged entity and the authorised entity) are organisational entities of the public finance sector. Funds intended to cover the subscription are public means at a disposal of units within the public finance sector, i.e. municipalities. The payment of the subscription involves only a relocation of certain public resources inside the public finance sector, i.e. from the municipality to the metropolitan association. The relocation of said means goes on amongst the entities of the local authority sector.

The annual subscription is composed of two parts: one fixed and one variable. In the year in which the metropolitan association was established, the fixed part of the annual subscription was determined by multiplying 0.001 and the quotient of revenues for the budget year concerned from municipality's proceeds of personal-income tax and from municipality's actual proceeds of personal-income tax. In 2017, 6,149,209 PLN was allocated in the budget with respect to the fixed part of the subscription (Annex 1 to Resolution no. 1/7/17 dated 12th September 2017), which accounted for approximately 49.97% of all association's revenues (however, no receipts from the variable part of the subscription were accounted for due to the fact that the budget adopted covered *de facto* the last quarter of 2017 only, whereas the remaining sources of revenues were: the proceeds of personal-income tax amounting to 6,149,209 PLN and the interest on funds accumulated in the bank account of the association in the amount of. 8,000 PLN). In the years following the year in which the metropolitan association was established, the fixed part of the annual subscription is determined by multiplying 0.005 and the quotient of revenues for the budget year concerned from municipality's proceeds of personal-income tax and from municipality's actual proceeds of personal-income tax. This signifies an essential increase of liabilities because the 0.001 factor has risen to 0.005.

Pursuant to Article 4(2) of the Act on the revenues of local authorities, the level of proceeds of the personal-income tax from taxpayers residing in the municipality is 39.34%. When calculating the proceeds of tax one must apply the correction coefficient laid down in Article 89 of the Act on the revenues of local authorities. Formally, the proceeds of the personal-income tax are the source of municipality's own revenues. They may be treated as a budget law institution used to relocate funds from the state budget to municipality budgets (Pest, 2016, p. 43). Receipts from the personal-income tax are registered on current accounts of revenue offices used for state budget banking services, and then distributed amongst local authorities in line with the method provided for by the Act on revenues of local authorities. Having regard to the method of registering receipts from the personal-income tax, the exclusive fiscal sovereignty of the state

with respect to this source of revenues and the functions of the heads of revenue office managing the same source, we may accept the view that this is a national tax (Tyra-kowski, 2016, p. 46), a part of which is forwarded to the local government. Furthermore, it is a source of revenues that is highly susceptible to ad hoc changes in the form of tax reliefs and exemptions weakening its fiscal performance. In addition, it is also dependent on economic cycles, i.e. in the downturn periods the receipts from said source may be smaller (Poniatowicz, 2014, pp. 71-72).

The functions of the proceeds of the personal-income tax have not been limited by the legislator to the role of the source of revenues of local authorities. They are used, amongst other things, as a calculation factor when calculating the basic amount of the countervailable subsidy for the municipality and municipality's revenue potential with the intention to determine municipalities with a duty to make obligatory contributions required to create a balancing subsidy distributed among municipalities of low revenue potential. In the Act on the metropolitan association in the Silesian Province, the proceeds of the personal-income tax also perform a calculation function in the calculation of the fixed part of the obligatory annual subscription paid by municipalities for the benefit of the association. The amount of the fixed part of the annual subscription paid by municipalities is, therefore, charged to its source of revenues, i.e. the proceeds of personal-income tax.

Yet another concept was adopted to calculate the amount of the variable part of the annual subscription. It is dependent on the number and scope of tasks municipalities delegate to the metropolitan association and it corresponds to the costs actually incurred by municipalities to carry them out. The variable part of the subscription plays the function resembling a price or a fee, i.e. it should be an equivalent corresponding to the costs actually incurred in the performance of a given task delegated to the metropolitan association. With respect to the detailed rules for the assessment of the variable part of the annual subscription and the time limits for their contribution, the legislator refers one to the provisions of the statute of the metropolitan association (Statute of the Metropolitan Association „Górnośląska-Zagłębiowska Metropolia”, Annex to the Resolution no. V/1/2018 dated 16th February 2018).

Pursuant to § 38 of the Statute, by the 31st day of March, the Management Board (the executive body) shall present the proposed amount of the variable part of the annual subscription for the subsequent budget year to the General Meeting (the decision-making body), accounting for the planned scope and method of task performance, including the calculation method adopted and all sources used to cover the costs. While estimating the variable part of the annual subscription, the Board should consider any foreseeable actual costs of task performance over the course of the next year, and the actual costs incurred to date by individual municipalities or municipal unions in which they participate for the completion of a given type of tasks. Depending on the nature of the public task, other criteria should also be included, i.e. with respect to public tasks re-

lating to spatial order development - the proportion between the area of a given member municipality and the area of the whole metropolitan association; with respect to public tasks involving planning, coordinating, integrating and developing collective transport - the proportion between the number of residents of a given member municipality and the total number of residents of the metropolitan association. Despite the fact that the legislator does not determine the capacity to vary the structure of the variable part of the annual subscription, the statute provides for the ability to divide it into the property part and the current part, according to its designed purpose.

When presenting the proposed variable part of the annual subscription, the Board should take account of the strategy of the metropolitan association and other programming documents adopted by the General Meeting, as well as data resulting from budgets, multi-annual financial projections and other financial documents of member municipalities. By the 30th June of the preceding year, the Board of the association determines the scope of tasks performed by the association in the subsequent budget year and the amount of the variable part of the annual subscription of individual municipalities. For the year 2018, 32,777,555 PLN of association's revenues has been planned for the annual subscription and this source accounts for approximately 9% of all annual revenues of the association (Annex No. 1 to the Resolution No. IV/24/2017 of the General Meeting of the Górnośląsko-Zagłębiowska Metropolis dated 19th December 2017).

The variable part of the subscription is paid in equal monthly installments by the 15th day of each month. The fixed part of the subscription is also paid in monthly installments by the 15th day of each month. In justified cases, upon request of a member municipality, the General Meeting may extend the subscription payment period, however it may not extend beyond the end of the calendar year. By the 30th March of the year following the year in which the subscription was paid, the Board of the association submits a comparative statement of the costs of performance of individual tasks adopted for the estimation of the variable part of the subscription and the actual costs incurred during task performance, along the reasons for the differences found and information regarding either the method and time frames for such differences to be covered or the purpose of any generated surplus appropriations.

Pursuant to Article 54 AMASP, the provisions of Section III of the Tax Ordinance Act dated 29th August 1997 apply correspondingly to the annual subscriptions, with the exception that the competencies of the tax authority are exercised by the President of the Board of the association. In the Polish legal order, monetary contributions set by law are quite frequently associated with the imposition of adequate application of Section III of the Tax Ordinance Act entitled „Tax obligations”. This means that interests should accrue on any late subscriptions as for tax obligations; a member municipality is fully liable (with all of its assets) for the subscription obligation towards the metropolitan association, hence in a manner resembling the liability of a taxpayer for his tax obligations. In the event of reliefs applied to the subscriptions due (deferring payment dates, division

into installments, and remission of duties), criteria stipulated in Chapter 7a of the Tax Ordinance Act must applied, i.e. with the condition relating to existence of an important interest of the person/entity obliged or a public interest.

The statutory structure of the subscription for the metropolitan association and reference to the relevant application of the provisions of Section III of the Tax Ordinance Act, as well as the provisions of Article 5(2) APF, justify the statement that the subscription paid by a municipality for the benefit of the metropolitan association is a form of a public levy of a special legal structure, earmarked for a special purpose. Furthermore, the municipal subscription paid for the benefit of the metropolitan association has also characteristic features of the price (with reference to its variable part of the subscription, taking account of the costs of public task performance).

Local Authority Budget Subsidies

Pursuant to Article 51(10) of AMASP, subsidies from local authorities' budgets are also treated as a source of metropolitan association's revenues. The quoted regulation uses a general phrase „from local authorities' budgets”, which means that the subsidy for the metropolitan association can be made by any local authority (a municipality, county or province), not only a municipality that is a member of the association. Consequently, the personal scope of donors is wider than the personal scope of members of the association since only municipalities of the Silesian Province can be such members, as set forth in Article 1(2) of AMASP.

The adoption of such a wide personal scope of donors results from the fact that the metropolitan association can cooperate through various forms even with local authorities that are not its members. The relevant decisions are presented in the Statute of the Górnośląsko-Zagłębiowska Metropolis. In particular by entering into arrangements with local authorities, the metropolitan association may accomplish public tasks that are within the scope of municipality, county, provincial government or local authorities' association's scope of operation. Under § 36(1)(4) and § 36(5) of the Statute, the association's revenues from member municipalities are revenues from financial aid (in the Statute financial aid is treated as synonymous with „subsidy”). Member municipalities interested in having the metropolitan association accomplish certain tasks may assist the association by granting it financial aid (subsidies) for their fulfilment. That above all refers to investment tasks.

It is not correct to use the terms „financial aid” and „subsidy” interchangeably in the statute or refer the terms to the legal institution of an arrangement. The Statute of the association is not in compliance with Articles 216 and 220 of APF that determine that local authorities need to assist other local authorities, local authorities' associations or the metropolitan association. The basis for granting aid is an agreement, not an arrangement, since it is a characteristic of arrangements between local authorities that

funds are transferred to another local authority, received and automatically transferred, or received to support the accomplishment of a given local authority's task (Warsaw Audit Office Resolution of 5th March 2013).

Under Article 216 (2)(5) of APF, the local authority's budget expenses are allotted to the accomplishment of tasks as defined by the relevant codes, including material or financial aid to other local authorities as defined in a relevant resolution by the local authority's decision-making authority. Taking into account Article 4 (2) of APF, according to which the provisions of the act referring to local authorities should be applied to metropolitan associations as well, as part of aid provided, local authorities have the right to grant subsidies to the metropolitan association. The rules of such aid provision are set forth in Article 220 of APF, under which a specific subsidy is a form of financial aid. Aid can be granted on the basis of an agreement between the subsidy donor and the subsidy beneficiary. The provisions of APF fail to introduce relevant limitations for giving financial aid by local authorities. Aid needs to be preceded by a municipality council's separate resolution on the matter (Bydgoszcz Audit Office Resolution of 27th January 2016). Passing such a resolution is part of municipality council's exclusive competence. A municipality council's resolution on giving financial aid to fund an investment should not only specify the subsidy beneficiary and the task that the financial aid is given to, but also the amount granted as part of the aid (Poznań Audit Office Resolution of 9th March 2016). The specific subsidy granted as financial aid may refer only to the financial year in which it is given (Warsaw Audit Office Resolution of 9th February 2016). The above suggests that financial aid for a metropolitan association cannot be given only under the AMASP regulations and the provisions of the statute of the association. Across the board it will require passing a resolution by the local authority's decision-making body that acts as the donor, regardless of whether the local authority is a member of that association or whether there is an agreement between the donor and the subsidy beneficiary or not (Gorgol, 2014, p. 1076). Neither in the metropolitan association's budget for 2017 nor in the budget for 2018, revenues from a local authority's subsidy, including member municipalities, were envisaged.

Proceeds of Personal-Income Tax

Revenues from personal income tax paid by natural persons living in the metropolitan association area are a source of income of that association. As mentioned above, the manner of defining the source by the legislator is imprecise, since it is not about natural persons residing in the metropolitan association's area but natural persons residing in municipalities constituting the metropolitan association. The legislator approaches these tax revenues differently because Article 52 of AMASP calls that source „state budget revenues” and the Act on the local authority's revenues refers to it as „a source of local authority's own revenues”, yet only within the meaning of that act. The doctrine high-

lights that a share in the revenues from a given tax is a given public entity's entitlement to participate in the revenues awarded to a different public entity (Ruśkowski, Salachna, 2004, p. 52). The local authority's right to receive a share in state tax revenues results in exploiting a common source of income and leads to the so-called tax inclusion (Kańduła, 2017, p. 42).

The value of the share and the manner of its calculation are specified in Article 52 of AMASP. The value of metropolitan association's share in the personal income tax revenues raised from the payers of that tax residing in the area of the metropolitan association in 2017 (the year of establishing the metropolitan association) was 0.2% and later 5%. The difference in the share is a consequence of the fact that in 2017 the metropolitan association started operating not earlier than in the very last quarter of the year and the association's revenues from that source were planned to amount to 6,149,209 PLN. The metropolitan association's budget revenues from the relevant source planned for 2018 reached 327,775,552 PLN, which was about 90% of total revenues. In addition to the above, metropolitan association's total revenues in 2018 also comprised the municipality membership subscription of 32,777,555 PLN and interest on funds accumulated in the association's bank account, i.e. 500,000 PLN.

The amount of the metropolitan association's personal income tax proceeds is calculated as a product of the total revenues from that tax and 0.05 (0.002 in 2017), and an indicator determined as a share of output personal income tax due to be paid by natural persons residing in the metropolitan association's area in the year preceding the base year in the total amount of output tax in the same year. Similarly as in the case of calculating local authority's revenue potential to specify the general subsidy due and the obligation to make payments to the state budget by local authorities earning above-average revenues, the term „base year” is also referred to when determining the amount of personal income tax revenues due to the metropolitan association. The term is defined in Article 2(3) of the Act on local authority's revenues and stands for the preceding budget year.

The amounts needed to calculate the metropolitan association's personal income tax revenues are agreed to be from the “year preceding the base year”, which is from before 2 years (the data from 2016, a year before the establishment of the metropolitan association, were the basis for the relevant calculations for 2018). These are historical data burdened with the risk of a falling demographic potential (a decrease in the municipalities' population) and the resulting revenue potential risk of each of the municipalities constituting the metropolitan association. The same comments can be made about future reference periods. The present municipalities' situation in that scope may significantly differ from that observed two years earlier. High sums from that source and the amount of the fixed part of the subscription will be financed by municipalities from the ongoing revenues that are lower than the revenues from previous periods. The adopted mechanism of calculating the fixed part of the annual subscription and the payment for

the personal income tax revenues does not provide for any adjustments that may be needed in a crisis. Similar words of criticism refer to the mechanism of calculating the amounts of each part of the general subsidy for municipalities and payments to the state budget obligatory for municipalities of above-average revenue potential, a part of which is allotted to the balancing part of the general subsidy for municipalities of low revenue potential.

Pursuant to Article 52(5) of AMASP, Article 11(2) and (3) of the Act on the local authority's revenues should be applied accordingly. The provisions govern the direction of flow of cash streams that come from personal income tax payments and the dates of transferring the amounts due to the metropolitan association. The means that are municipalities' personal income tax revenues are transferred from the state budget's central current account to the metropolitan association's current account by the 10th of the month following the month when the tax was credited on the tax office bank account. The funds that are due for December are transferred in two instalments: by the 20th of December of the budget year (an advance payment of 80% of the amount transferred for November of the budget year) and by 10 January of the following year (the discrepancy between the amount of the personal income tax revenues that was credited on the tax office bank account in December and the amount of the aforementioned advance payment).

Conclusions

As a result of the conducted analysis of the normative material and the assumptions adopted in the successive two budgets of the metropolitan union in Silesian voivodeship the planned research goals have been achieved. The hierarchy of the income sources of the union has been determined with the consideration of their efficiency. Additionally, it has been revealed that both the organs of the metropolitan union and the organs of the local government units, being members of the union, as a rule cannot freely increase or decrease strains on the finances of the union's members. The legislator has strictly established the amount of the share in the income on personal income tax and the fixed part of the membership fee. A specific margin of freedom is only left by the legislator in relation to the variable part of the membership fee and subsidies from local government units to the metropolitan union.

Of the broad statutory catalogue of the sources of revenues of the Górnośląsko-Zagłębiowska Metropolis, solely three sources have been used to date: the annual subscriptions of municipalities comprising the association, the proceeds of personal-income tax, and the interest on funds accumulated in the association's bank account. It is impossible to compare the metropolitan association's budgets in the years 2017 and 2018 due to the fact that year 2017 – the first and incomplete year of association's operations – was treated by the legislator as a typical transitional period. In the first year of operations, lower appropriations for municipalities under the subscriptions due

and the personal-income tax revenues were set. The budget of the association for the year 2017 was adopted as late as in September 2017 and it included the last quarter of the annum. The following budget of the metropolitan association covered the entire budget year. This was reflected in the total revenues and spendings of said budgets. Budget revenues planned for the year 2017 were 12,306,418 PLN, whereas in 2018 they amounted to 362,554,007 PLN. The year-over-year performance demonstrated an over 29-fold increase in the total planned revenues. Greater differences were observed in budget expenditure, which in the year 2017 amounted to 3,200,661 PLN, and in 2018 reached 192,404,100 PLN. The year-over-year performance demonstrated an over 60-fold increase in the total budget expenditure.

The analysis of the budgets of the metropolitan association in the years 2017-2018 reveals that the proceeds of personal-income tax remain the main source of revenues. In the first (incomplete) year of association operations, receipts from that source accounted for approximately 49.96% of total revenues, while in 2018 - for as much as 90% of total revenues. However, the importance of receipts from municipality subscriptions dropped from 49.97% in 2017 to approximately 9% in 2018. The revenues from the interest on funds accumulated in the bank account of the metropolitan association were of supplementary importance at that time and totalled to 8,000 PLN in 2017 (ca. 0.07% of total revenues) and 500,000 PLN in 2018 (ca. 0.14% of total revenues). Subsidies from local authorities were not recorded as the form of budget revenues of the metropolitan association in the above period.

The study demonstrates that the roles of individual sources of budget revenues of the metropolitan association vary when it comes to revenue generation. Of the three types of the sources of revenues generated by local authorities, the most essential source is the proceeds of personal-income tax levied on persons living within the metropolitan association. The fiscal importance of the subscriptions paid by municipalities comprising the association dwindled in the year 2018, whereas the subsidies from local authorities for the benefit of the metropolitan association were not observed on the revenue side of the association's budget. An analysis of the binding law demonstrates that there are legal bases to increase municipality burden due as part of the variable part of the annual subscription and subsidies to cover the costs of public task performance. One may suspect that such actions will be undertaken if the costs of public tasks performed by the metropolitan association increase. The cost method is an essential structural element when assessing the variable part of the subscription and developing the procedure for the assessment of subsidies. This will allow necessary adjustments of financial resources of the association in the relation of costs of public task performance and preservation of relevance, in static terms, of funds with respect to the statutory scope of public tasks of the metropolitan association. Nonetheless, any bottom-up adjustments, i.e. made without a new amendment to the act, require relevant agreements between the association's bodies and the association's members.

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THE LIMITS OF THE FREEDOM OF A COMMUNE COUNCIL IN DETERMINING AND DIFFERENTIATING OF PROPERTY TAX RATES

The power of communes to impose taxes, which is guaranteed in the Constitution of the Republic of Poland and the European Charter of Local Self-Government, includes the competences of a commune council to determine and differentiate the rates of property tax. Using the legal dogmatic method and, additionally, the empirical-analytical method, the study presents and evaluates the legal solutions justifying the claim that the competences of a commune council can only be exercised within the limits determined in the Tax Act. The statutory limits were set through determination of maximum annual tax rates and the subjective criteria pursuant to which the tax rates may be differentiated. Therefore, it may be assumed that the competences of a commune council are limited. The manner of exercising them is subject to supervision by regional accounting chambers as well as control carried out by administrative courts. Exercising of these competences by a commune council may constitute an important instrument of the local tax policy.

Keywords: tax rates, commune council, property tax, power to impose taxes, local tax policy.

JEL Classification Codes: H70, H72.

Introduction

The general power to determine the amount of taxes and local charges, guaranteed to local government units (lgu) in the Constitution of the Republic of Poland of 2nd

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April 1997 and the European Charter of Local Self-Government (ECLSG) drafted in Strasbourg on 15th October 1985, is shaped through legal acts. This is the result of the reference to the Act in Art. 168 of the Constitution of the Republic of Poland and Art. 9(3) of ECLSG. Neither ultimate limits of shaping the amount of taxes and local charges were formulated in the Constitution of the Republic of Poland and ECLSG nor were any tax law instruments mentioned with the use of which it is possible to shape the local public levies. Each of the above mentioned legal acts uses the phrase „within the scope specified in the Act”. Pursuant to the dictionary definition, the term „scope” is understood as framework, width, range (Bańko, 2005, p. 953), limits (Bańko, 2007, p. 305; Dubisz, 2003, p. 481). This means that the legislator is authorised to determine the limits within which Igu may use the tax law instruments resulting in reduction of taxes and local fees (Zawora, 2014, p. 24). The most frequently used instruments include tax rates and tax exemptions. The doctrine indicates that Art. 168 of the Constitution of the Republic of Poland may be treated in a broader manner, i.e. not only as a standard for introduction of statutory constructive solutions of a specific local levy (the lawmaking sphere), but also referring to solutions enabling tax authorities to make decisions on the amount of local levies in specific cases in the form of tax obligation relieves (the law application sphere) (Etel, 2010, p. 382).

The aim of the study is the analysis and evaluation of the applicable tax legislation which determines the powers of communes to shape the amounts of property tax rates (the Act of 12th January 1991, further LTFA) supported with the analysis of the achievements of the doctrine and judicial decisions concerning the manner of application of the regulations determining the limits of commune's competences within the area of the power to impose taxes. The problem of shaping the amount of rates is examined in two areas, i.e. determining of their amount and differentiating of tax rates. In the first area, a commune is obliged to exercise its competences (it must determine the tax rates), whereas, in the second one, it is empowered to use its competences (it may differentiate the amount of tax rates) (judgement of the Voivodeship Administrative Court in Gliwice of 2nd June 2011). If a commune council, acting within the limits of law, does not use its competences to differentiate tax rates within the same type of the taxation subject (e.g. other buildings), the determined rate shall apply for all objects subject to property tax within this category (judgement of the Voivodeship Administrative Court in Gliwice of 18th June 2008). Summing up, there are two possible situations where communes determine tax rates, but do not differentiate them or such when communes determine and differentiate tax rates for individual types of real property.

The choice of the examined problem is justified with the fact that the property tax is a source of commune's own budget incomes, which is, at the same time, one of the most effective sources as regards the value of cash inflows. Each year, the total amount

of ca. PLN 20 billion is paid into the budget of all communes². A thesis has been formulated, according to which a commune, using its powers to determine property tax rates, operates within the limits determined by the legislator, which shall not be crossed. Its activity within this scope is subject to supervision by regional accounting chambers as well as court control carried out by administrative courts.

The economic consequences of the commune's arrangements referring to tax rates and their diversification directly burden the commune's budget and shall not constitute a basis for filing claims against the State Treasury concerning compensation of lost incomes from this source. The power to determine property tax rates and differentiate them is the outcome of commune's independence guaranteed by the law in the area of shaping its own incomes and an instrument of the local fiscal policy focused on achieving long-term objectives, e.g. management of specific areas, promotion of entrepreneurship. It has been correctly assessed that the commune's independence is when it has legal instruments for shaping and implementing of its own fiscal, social and economic policy (Nieżgoda, 2010, p. 361). A commune is, nevertheless, not completely independent in its actions because it may make respective arrangements „within the extent provided by the law” and, thus, its power is limited (Kotulski, 2004, p. 125) pursuant to the intent of the constitutional legislator specified in detail by the legislator in the legal construction of a specific local tax or local fee.

The study uses the legal dogmatic method as the dominant one as well as, additionally, the empirical-analytical method (in particular for presentation of selected judgements of administrative courts concerning the manner of exercising its powers by a commune as regards property tax rates).

Powers of a commune council to determine the rates of property tax

Pursuant to Art. 5(1) of LTFA, a commune council determines property tax rates through a resolution, yet they shall not exceed the annual maximum rates determined in the Tax Act for individual categories of real property and types of real property within them. A commune council is obliged to exercise this competence, which is prejudged by the phrase used in the content of the above mentioned provision: „a commune council shall determine”. If the legislator's intent had been to formulate only the rights of a commune council, the phrase „may determine” or „is empowered to determine” would have been used. Should a commune council fail to perform its duty determined under Art. 5(1) of LTFA, i.e. fail to adopt a tax resolution determining the property tax rates for a given year, Art. 20(1) of LTFA shall be applied, pursuant to which the tax rates from the previous tax year shall be applied. Pursuant to the above mentioned provision, the tax rates

² Financial ranking. Property tax is a significant source of communal incomes, Serwis Samorządowy PAP, samarząd.pap.pl

applicable in the year preceding the tax year shall only apply if no resolution is adopted for a given year until 31st December of the year preceding the tax year. If, on the other hand, a commune council delays determination of the rates and intends to do it in the tax year (after 1st January), it shall not have the right to do so. Then, the tax rates from the resolution applicable in the year preceding the tax year shall apply (judgement of the Voivodeship Administrative Court in Krakow of 20th December 2012). Based on the analysis of Art. 20a(1) of LTFA, it may be concluded that, in the subsequent tax year, there may be new rates determined by a commune council in a resolution adopted pursuant to Art. 5(1) of LTFA or the rates applicable in the year preceding the tax year if such a resolution is not adopted. There are no normative grounds for two tax rates being applicable during a tax year for a particular type of real property (judgement of the Supreme Administrative Court of 19th November 2010).

The legislator, for taxation needs, distinguishes three categories of real property (land, buildings and their parts, structures). Within these categories, the real property is divided in accordance with its intended purpose, e.g. the category of „buildings and their parts” has been divided into: residential ones, those connected with conducting of business activity, connected with provision of healthcare services and others. The basic idea of real property taxation is relativisation of the amount of tax to the tax payer’s scope of use of the land and buildings. Systemic corrections of this idea are applied, which involve differentiation of the annual tax rates depending on the manner of use of the land or building (Brzeziński, 2011, p. 8). The order to determine tax rates through a resolution means that they should be determined in a general manner (with reference to the category of tax subjects), i.e. without indication of specific real property, e.g. a specific building or plot of land (resolution of the RAC in Olsztyn of 14th March 2016).

The power of a commune council to determine property tax rates is of an exclusive nature and shall not be transferred to any executive authorities of a commune (a village administrator, a town or city mayor). The exclusive power of a commune council to determine property tax rates is prejudged by Art. 18(2)(2) of the Act of 8th March 1990 on commune self-government (further CSA), pursuant to which the exclusive competences of the commune council shall include the adoption of resolutions on taxes and fees within the limits set out in separate acts. This means that the above mentioned provision is of a central competence nature. The legislator, in this case, used the technique of fragmenting the content of the legal norm, which consists in the fact that, apart from the central provision, there are also other provisions affecting the content of the norm, co-designating it together with the central provision (judgement of the Voivodeship Administrative Court in Białystok of 6th September 2007). The provision of Art. 18(2)(8) of CSA does not constitute an independent basis for „tax” competences of a commune council (Borszowski, 2004, p. 67) and should be applied with the respective provision of the Tax Act. In the case under discussion, the provision should be applied together

with Art. 5(1) of LTFA setting the boundaries of the competences of a commune council to determine property tax rates.

The manner of drafting the provision of Art. 5(1) of LTFA indicates that, already on the level of the Act, there has been differentiation of tax rates concerning individual types of real property. The lowest tax rates refer e.g. to residential buildings and their parts as well as land (including those occupied for conducting of paid statutory public benefit activity by public benefit organizations) unless they are connected with conducting of any business activity. The highest rates, being multiple lowest rates, refer to buildings and their parts as well as land connected with conducting of business activity. The differentiation is the effect of applying the social and economic criteria by the legislator (judgement of the Voivodeship Administrative Court in Szczecin of 23rd January 2013).

Pursuant to Art. 5(1) of LTFA, a commune council shall determine the annual property tax rates, which means that the rates shall not be changed (increased) during the tax year and neither shall new categories of taxation subjects be distinguished during the tax year (resolution of the RAC in Szczecin of 27th April 2016). The property tax is of an annual nature and, thus, a resolution of a commune council on the amount of these tax rates shall not become effective during the tax year (resolution of the RAC in Olsztyn of 26th January 2016). The principle to be observed is the one developed in the judicial decisions of the Constitutional Tribunal pursuant to which no changes in tax law resulting in an increase in the taxation burden shall be introduced during the tax year (Etel, 2004, p. 36). Tax obligations should be known to tax payers well in advance before the beginning of the tax year. Tax payers shall have some time to adjust their decisions to the tax which they will have to pay in the upcoming tax year.

A commune council, adopting a tax resolution, pursuant to Art. 5(1) of LTFA, shall not determine tax rates at a higher level than the maximum tax rates adopted in the Tax Act for a particular year. A possible determination of tax rates at a level higher than that set out in the Act would be a significant violation of Art. 5(1) of LTFA (resolution of the RAC in Bydgoszcz of 22nd December 2010). A commune council is empowered to determine, in its resolution, the rates for a particular type of real property at the same level as in the Act (*de facto* it will repeat the maximum statutory rates in its resolution) or determine them on a lower level than the statutory one, whereas the minimum tax rates have not been determined in the Act. Nevertheless, determination of tax rates for any category of real property included in the Act in the amount of PLN 0 does not enable the performance of the tax obligation. In the case of determining the PLN 0 tax rate, neither can tax payers perform their tax obligation nor can the commune council exercise its duty to determine the rate. Therefore, the „zero” amount shall not be considered a tax rate (judgement of the Supreme Administrative Court of 22nd July 1993). A commune council may, nevertheless, referring to Art. 7(3) of LTFA, introduce objective exemptions from taxation other than those provided for in the Act. In economic terms, this will have the same outcome as in the case of the prohibited PLN 0 rate (Paczocha, 2000, p. 10).

Property tax rates are determined in the Act in the form of specific amount rates, and only in the case of structures, a percentage rate has been applied. A commune council, determining property tax rates through a resolution, should comply with the rule and include, in its resolution, specific amount rates and percentage rates respectively for individual taxation subjects. A commune council, guided by the principle of clarity and transparency of the adopted law, should determine tax rates in compliance with this rule. Tax payers should know what the right tax rates are for them rather than calculate these themselves (resolution of the RAC in Bydgoszcz of 12th December 2007). For these reasons, a tax resolution should not contain any provisions requiring that tax payers determine the tax rate themselves, e.g. the rate for residential buildings applicable in the area of the commune is 15% lower than the maximum rate determined in the Act. Neither is a commune council entitled to change the type of the rate adopted in the resolution, i.e. from the specific amount to the percentage rate or from the percentage to the specific amount rate.

Powers of a commune council to differentiate the rates of property tax

Introduction of the competence of a commune council to differentiate property tax rates is a manifestation of the legislator's care for the independence of communes. The way in which commune councils exercise this competence is of crucial importance in this case. Differentiation of tax rates with the use of objective criteria gives communes the possibility to adjust tax rates to local conditions. This should be important in situations which are related to the aspect of business activity, especially in those communes which consider the development of local entrepreneurship as one of their strategic objectives (Borszowski, 2006, p. 171).

The powers of a commune council to differentiate the rates of property tax are regulated in Art. 5(2-4) of LTFA. In this manner, real property has been divided into three categories and the criteria for differentiating the tax rates have been included in three separate catalogues. In each case, the open nature of these catalogues has been maintained, as the list of the criteria has been preceded by the words „in particular”. This means that a commune council may, while differentiating the tax rates, take into account both the criteria directly mentioned by the legislator and other criteria, which have not been mentioned in the Tax Act, but introduced by a resolution of the commune council (resolution of the RAC in Katowice of 22nd November 2012). Nevertheless, this does not mean that a commune council is completely independent to act in this respect. The criteria defined directly in the Act are of a subjective nature, i.e. they refer to the features of the tax subject and, therefore, other criteria adopted by a commune council by way of a resolution should also maintain such nature (judgement of the Voivodeship Administrative Court in Warsaw of 19th September 2006). Such a conclusion justifies

the construction of Art. 5(1) of LTFA, where the maximum tax rates are differentiated according to the characteristics or purpose of the real property subject to taxation rather than the characteristics of the tax payer who owns some specific real property.

While determining the tax rates for land, a commune council may differentiate their amount for individual types of taxation subjects, taking into account, in particular, the location, type of conducted activity, type of development, intended use and manner of land use. Nevertheless, none of these differentiated tax rates may exceed the maximum rate adopted in the Act for a particular type real property (Etel, 2009, p. 76). Art. 5(1)(1) of LTFA distinguishes four types of land subject to taxation. This is the land:

- connected with conducting of business activity,
- under standing surface waters or flowing surface waters of lakes and artificial reservoirs,
- other, including that occupied for conducting of paid statutory public benefit activity by public benefit organizations,
- undeveloped land included in the revitalisation area and located in areas for which the local spatial development plan provides for use as residential, service or mixed-use development, including only those types of development, if the period of 4 years has elapsed since the effective date of the plan with respect to such land and construction has not been completed within that period pursuant to the provisions of the construction law.

When differentiating the tax rates applied to the taxation of residential buildings or their parts, a commune council should, in particular, take into account the following criteria: location, manner of use, type of development, technical condition and age of the buildings. The above mentioned criteria of tax rate differentiation indicate that the legislator's intention is that the tax rate should depend on the value of a building (location, type of development, technical condition, age of buildings) or on the object of business activity (manner of use), which should be understood as the need to adopt a factor that will lead to the tax being relative to the taxation subject (judgement of the Voivodeship Administrative Court in Bydgoszcz of 16th March 2011). Differentiation of tax rates in a resolution of a commune council depending on the taxpayer's source of income rather than on the location, manner of use, type of development, technical condition and age of buildings violates Art. 5(3) of LTFA as it refers to subjective criteria and not objective criteria (resolution of the RAC in Szczecin of 23rd November 2011).

The criterion of the type of conducted business activity was the only one indicated by the legislator in Art. 5(4) of LTFA allowing for the possibility of differentiating, by the commune council, of the tax rates applied for taxation of buildings or their parts:

- connected with conducting of business activity and residential buildings or their parts occupied for conducting of business activity,
- occupied for conducting of business activity in the field of marketing of certified seeds,

- connected with provision of healthcare services and occupied by the entities providing these services,
- other, including those occupied for conducting of paid statutory public benefit activity by public benefit organizations.

The above mentioned criterion of the „type of conducted activity” should also be taken into account in the event of a commune council differentiating the tax rates applied to the taxation of structures.

It may be concluded that granting a commune with the right to differentiate tax rates assumes that these rates will not be equal for all tax payers. From the point of view of the principle of equal taxation, it is important that entities in the same situation are treated equally and that differentiation does not refer to subjective criteria. Thus, differentiation on the basis of an objective criterion is permitted. If the differentiation is based on the Tax Act, it should be considered legal (judgement of the Voivodeship Administrative Court in Rzeszów of 18th May 2017). The number of taxpayers who meet certain objective criteria constituting the basis for taxation with property tax does not affect the admissibility of tax rate differentiation if the content of a specific provision of the resolution of a commune council unequivocally indicates the objective criterion of the differentiation made (judgement of the Supreme Administrative Court of 2nd February 2017). No subjective criteria may be used as a basis for a commune council to differentiate the rates of property tax (judgement of the Voivodeship Administrative Court in Opole of 13th April 2011). In particular, it is not permissible to differentiate between the tax rates for individuals and legal entities, as this leads to discrimination against the tax payer or a group of tax payers and is beyond the limits of the statutory authority of a commune council (judgement of a Voivodeship Administrative Court in Łódź of 7th October 2010).

Selected practical aspects of determining and differentiating property tax rates by commune councils

When examining the effects of communes' activities on determination and differentiation of property tax rates, one should refer to resolutions of commune councils documenting the manner of exercising these powers by the commune self-government as well as to the resolutions of regional accounting chambers issued in the supervisory mode, which indicate the types and severity of violations of law committed by commune councils. The content of 200 resolutions of commune councils adopted in the years 2015-2017 was examined, which constitutes a sample of about 4% of all resolutions adopted in that period. The most important findings are presented below, enabling the assessment of the quality of the local tax law making process within the limits set by the legislator, in relation to one public levy and only within the scope of one of its structural elements, the so-called tax rates.

The analysis of the provisions of selected resolutions of commune councils shows that the differentiation in the amount of property tax rates referred mainly to the category of „other buildings”. Within this category, which has not been divided into specific types of real property by the legislator, commune councils distinguish e.g. utility buildings, free-standing garages, holiday and recreation homes, determining tax rates for each type of real property at different levels, but not higher than the maximum statutory rate adopted for the category of „other buildings” (resolution of the Town Council in Ujście of 28th September 2015). Moreover, recreational grounds have been distinguished within the category of „other land” and taxed at a higher rate as compared to other land for which a significantly reduced rate has been applied, as compared to the maximum statutory rate (e.g. resolution of the Lubasz Commune Council of 27th October 2016). In the category of „structures”, for which the maximum statutory rate is 2%, a sub-category of „structures used for winter sports, i.e. ski lifts, gondola and chair railways, snow-making installations” has been distinguished with a tax rate of 1% of their value (e.g. resolution of the Stronie Śląskie Town Council of 27th October 2016) or a sub-category of „structures used for collective water supply” with a tax rate of -0.5% of their value (e.g. resolution of the Miękinia Commune Council of 30th September 2016). Within the category of „buildings or their parts connected with conducting of business activity”, a sub-category of „buildings used for the storage of agricultural equipment” has been identified with a 50% reduction in the tax rate compared to the maximum statutory rate for the whole category of „buildings or their parts connected with conducting of business activity” (e.g. resolution of the Miłosław Commune Council of 3rd November 2017).

Not very often have the commune councils used the criterion of the type of conducted business activity in the case of tax rate differentiation. One of the few such cases concerns the distinction of several business activities (provision of veterinary services, production of textiles, manufacturing of metal products, storage activities) and adoption of an appropriate tax rate (e.g. resolution of the Kudowa - Zdrój Town Council of 25th November 2015).

When exercising their powers to differentiate property tax rates, in some cases, commune councils clearly indicated that they considered this competence as an instrument to introduce specific preferences in the taxation of certain real property, e.g. by applying the lowest possible specific amount rate of PLN 0.01. per 1 m² of the land occupied for the purpose of conducting business activities in the field of sports shooting ranges. The determination of such a tax rate was justified by the need to develop sports shooting in the commune and to provide assistance in creating conditions for practising of sports shooting (e.g. resolution of the Mragowo Commune Council of 6th April 2016).

Differentiation of tax rates in the examined period took place on the basis of the criteria directly mentioned in the Act, including mainly the criterion of the type of conducted business activity, the manner of using the buildings, the intended use and the manner of using the land. Commune councils, despite their powers, did not create any new criteria

of tax rate differentiation. The most frequent deficiencies found by the regional accounting chambers concerned exceeding of the statutory powers by commune council. Such deficiencies involved primarily differentiation of tax rates based on subjective criteria (e.g. tax rates were set for fuel stations, banks; resolution of the Adjudicative Board of the Regional Accounting Chamber in Poznań of 3rd November 2016) or subjective and objective ones, while commune councils may only apply subjective criteria within this scope. In the course of their supervision, the regional accounting chambers also questioned the creation, by commune councils, of new categories of taxable real property, such as „standing surface waters” and „flowing surface waters of lakes and artificial reservoirs”, whereas the provisions of the Tax Act indicate that “the land under standing surface waters or flowing surface waters of lakes and artificial reservoirs” is subject to taxation (resolution of the Adjudicative Board of the Regional Accounting Chamber in Poznań of 30th November 2016). The omission of the term „land under water” in the resolution of the commune council led to exceeding of the commune council's powers.

Conclusion

As regards property tax rates, the powers of a commune council are located in two areas, i.e. the one covering determination of tax rates for a particular calendar year and the one concerning differentiation of these rates using the criteria set out in the Act or other criteria adopted in a resolution of the commune council. The powers of a commune council contained in the first area are connected with the obligation to fulfil them and the performance of this obligation is secured by the provisions of Art. 20(1) of LTFA, according to which, in the event of failure to determine tax rates, the rates applicable in the year preceding the tax year are used. In this way, the risk of a regulatory gap and the inability to levy property tax in a particular commune have been prevented. The phrase „rates applicable in the year preceding the tax year” used in Article 20a(1) of LTFA should not be limited to the tax rates specified in the tax resolution of the immediately preceding year. If the omission of a commune council in determining tax rates has lasted longer than one year, the rates from the most recent resolution adopted by the commune council, even adopted a few years ago, should be applied. Nevertheless, these shall not be higher tax rates than the currently applicable statutory maximum rates. The principle expressed in Article 20a(1) of LTFA applies only to tax rates. If any tax exemptions were also specified in the tax resolution, they cease to be in force when the resolution expires (Popławski, 2007, p. 31).

Pursuant to Art. 20 of LTFA, the upper limits of the statutory maximum amount rates applicable in a particular tax year are changed annually for the following tax year to the extent corresponding to the consumer price index for goods and services in the first

half of the year³ in which the rates are changed, compared to the same period of the previous year. The Minister of Finance shall announce, through an announcement in the Official Journal of the Republic of Poland - „Monitor Polski”, the upper limits of these rates for each tax year, taking into account the above mentioned principle. The adoption of this rule means that the statutory maximum tax rates may increase (in the case of inflation) or decrease (in the case of deflation). In conclusion, the statutory statement „a commune council shall determine property tax rates by way of a resolution” is fully realistic and refers both to cases in which an appropriate resolution is adopted for each subsequent tax year and when the necessity arises to apply the extraordinary procedure regulated in Article 20a(1) of LTFA.

Within the second area, the powers of a commune council are not connected with the obligation to use them, as a commune council may only differentiate the level of tax rates for individual types of taxation subjects. In this respect, it may apply the criteria specified directly in the Act or the criteria established independently by way of a tax resolution. Nevertheless, when formulating its own criteria for differentiation of tax rates, it cannot act completely independently because it can only differentiate rates according to objective criteria as it has been done in the Act.

The powers of a commune council to differentiate the level of property tax rates are not self-contained and can only be exercised together with the competences to determine the level of tax rates. This means that a commune council may only use its competences to differentiate tax rates provided that it first determines the level of tax rates. Actually, it is not possible to differentiate what has not been defined before. On the other hand, the powers of a commune council to determine the amount of property tax rates are self-contained because a commune council, when determining these rates, is not obliged to differentiate them. In practice, most frequently, commune councils use the competence to determine and differentiate property rates at the same time.

The study shows that the competences of a commune council to determine and differentiate property tax rates fit within the limits of its power to impose taxes. They are of a limited nature, as are other competences within the power to impose taxes, e.g. relating to the introduction of tax exemptions. The justification for the application of these restrictions is primarily the provisions of the Constitution of the Republic of Poland and the ECLSG, which explicitly refer to the phrase „within the scope specified by the Act”. The power of a commune to determine and differentiate the level of property tax rates is limited, whereas the forms and methods of such limitations are set out in the Tax Act. They are not unchangeable and may be modified by the legislator in accordance with the set objectives of the fiscal policy implemented in the state.

³ The price index is determined based on an announcement by the President of the Central Statistical Office published in the Official Journal of the Republic of Poland - „Monitor Polski” within 20 days after the end of the first half of the year

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INTEGRATION OF THE FINANCIAL MARKET EU AFTER THE FINANCIAL CRISIS

The EU integration and the creation of the so-called European single financial market requires creation of institutional solutions corresponding to the integrated structure. At the moment, we are dealing with globalisation of financial markets, and thus with a growth in their integration. However, full integration of the financial system, or the lack thereof, will be only achieved when European states overcome the still lasting financial crisis and its effects in the form of recession in most EU countries.

The purpose of this article is to present the situation concerning the integration of financial markets, as illustrated with the example of countries belonging to the EU, with emphasis on the situation on the Polish financial market after the deepest and the most severe financial crisis for the world economies, namely after 2008–2009 as compared with the period preceding the financial crisis.

Keywords: integration, financial market, financial crisis.

JEL Classification Codes: G01.

Definition of the integration of financial markets

When referring to the definition of the integration of financial markets, we should assume the following term as the starting point: the financial system. The financial system, as written by S.I. Bukowski, is defined as all legal standards and financial institutions, the main aim of which is to gather, allocate and redistribute cash funds. The entire

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financial system consists of the public financial system and the market financial system (Bukowski, 2011, p. 13).

One of the instruments of the market financial system is: the financial market. In the doctrine, a market means a set of components organised both in tangible and intangible terms. Financial markets are markets, where the main role is played by financial instruments. Therefore, their category includes: the stock market, the bond market, the securities market, the foreign exchange market, etc.

Financial market is one of the leading markets in economy related to the market of products and services and labour market. First thing it is a mechanism of short and long term capital mobilisation and its allocation in order to finance investments ventures. Financial market performs main functions in economy, such as ensuring liquidity in economy, allocation of capital in economy, economic shock absorption through the risk sharing mechanism (Bukowski, 2009, p. 186).

To sum up the above, financial market is the place where the supply and demand for financial instrument meet. Moreover, the market can be divided into: money, capital, primary, secondary, private and public market (Pera, 2015, p. 54).

The concept of financial market integration and its degree is broadly defined (Bukowski, R.Gowers, 2016, p. 9).

In connection with the above, the notion of integration of financial markets on the international scale means that assets generating identical cash flows have the same rate of return. It is connected with the fact that companies issuing bonds in two countries or regions have to pay interest according to the same interest rate to the bond holders from these countries or regions (Bukowski, 2011, p. 32).

It should be emphasised that the integration of financial markets on the international scale affects the economic growth. It happens through stimulation of financial development. Therefore, such integration affects the development of local financial markets through the growth in investments in the financial sector and through the increase in the depth of financial markets. Furthermore, in the event of direct investment inflow to the financial sector, the competition and the effectiveness of financial institutions increase (Bukowski, 2011, p. 34). This effectiveness, in turn, is reflected in the growth in financial stability, since in the event of financial shocks, an efficiently operating system is able to assimilate them.

Therefore, it can be said that financial market integration could be one reason with respect to facilitation of cross border investments (Islami, 2011, p. 46.)

As written by A. Kosztowniak, through growth in effectiveness, financial markets contribute to the highest degree to the social and economic development of a country or region. However, deregulation of financial systems and liberalisation of the movement of capitals intensify the instability and the crisis trends in various countries and regions (Kosztowniak, 2009, p. 41). Thus, the excessive degree of deregulation of financial markets limits the effectiveness of control and supervision over such a market. This,

in turn, reduces the effectiveness of actions aimed at funding of the economic growth (Olszewska, 2012, p. 209–210; Bednarczyk, Kosztowniak 2010, p. 97–98). It should be thus noted that the quality of financial regulations and supervision is also one of the factors stimulating economic growth.

In addition, financial market integration combines three features: 1) the market is considered fully integrated if, firstly, all market participants will have to face the same set of rules when trading on the market; 2) they have equal access to a set of financial instruments or services; 3) they are not discriminated against in relation to a comparable market (Mobarek, Mollah, 2015, p. 2).

Lack of institutional adjustments or improper regulation of financial markets triggers the risk of a financial crisis.

Financial crisis – the origin

The notion of a crisis comes from Greek and means a choice, a decision, a struggle, a fight, in which we act under the pressure of time. Crisis expands its meaning with such characteristics as its sudden, traumatic nature and subjective consequences of trauma in the form of negative experiences (Małecki, 2009, p. 106). The "economic crisis", in the strict sense, means rapid reduction in economic activity (production, employment, investments) (encyklopedia.pwn.pl, accessed on: 25.07.2017). From July 2007, the world has been facing the most severe and the most destructive financial crisis since 1929. The first crisis of the industrialised economy occurred in 1825 and affected Great Britain (see more: Hsu, 2017, p. 3 et seq). It was caused by the good economic situation of the previous years related to the opening of the markets of European countries to the British industry. Another noteworthy crisis took place between 1846–1847. Its reach covered the Western and Central Europe, and it was caused by excessive investments related to railway construction. The first worldwide crisis occurred in 1857 (Krawczyk, Przybytniowski 2010, p. 77). It began in the USA and covered: Great Britain, France, Germany, Sweden, Denmark, Austria, Spain, Belgium, the Netherlands, Italy, Russia, as well as some countries in Latin America.

The present crisis, which originated primarily in the United States in August 2007 (Górniewicz, 2016, p. 29), covers the whole world and is very deep. It turned out to be complex and is rapidly spreading over various market segments and countries. Many elements of the financial system are put under strong pressure. Some markets and institutions have ceased to function. This, in turn, has adverse effects for the real economy. Financial markets are based on trust, and a considerable part of this trust has vanished.

The crisis that had paralyzed global financial markets began to affect the real economy. The severity of the crisis varies significantly in the region. In Europe the recession was even worse, with the contraction in GDP of 4,1 per cent (Subacchi, 2011, p. 66).

The crisis on financial markets and its symptoms

Economic recession appeared in countries belonging to of the Organization for Economic Cooperation and Development (OECD).

Governments and central banks all around the world adopt a number of measures aimed at improving the economic situation and reducing systemic risks. They include various packages aimed at stimulating the economic condition, huge funds from the central bank, recapitalisation of financial institutions, guarantees for specific kinds of financial activities, especially for inter-bank loans (Krawczyk, Przybytnowski 2010, p. 77).

The authorities shaping the monetary policy and the authorities responsible for regulation of financial markets and financial supervision all around the world must do much more in the future to decrease the risk of re-occurrence of events of this type. To prevent re-occurrence of a crisis of similar severity, it is necessary to make a number of significant changes consisting, for instance, in strengthening the coordination of economic policies and control over the budgetary situation in the Member States (PAP Biznes, 2010, [www. stooq.com](http://www.stooq.com)). These changes should apply not only to the financial system of the European Union (EU), but also the entire global system.

Shaping of macroeconomic indicators during the economic crisis (2008–2009) illustrated with the example of Poland and the EU

The effects of the financial crisis born in the United States can be deeply felt by most world economies. It started from the collapse of Lehman Brothers (Romer, 2011, p. 17 et seq). The economic situation in Poland is also shaped by the economic downturn in the world, particularly in EU countries. When analysing the macroeconomic situation of Poland, we should not only examine the shaping of macroeconomic indicators, but also compare them with the situation of countries belonging to the EU (Tarnawska, 2009, p. 1).

Over the subsequent quarters of 2008, the EU-27 suffered a gradual reduction in the pace of GDP growth. In the 1st quarter, the GDP growth amounted to 2.4% ([www. ec.europa.eu](http://www.ec.europa.eu); accessed on: 20.05.2017), and in the third quarter - 0.7%. In the 4th quarter, the growth rate was already negative (1.7%). The decreasing tendency grew in the 1st and the 2nd quarter of 2009, when GDP dropped by 4.8%. The deepening of the global economic crisis is proved, apart from the decrease in the pace of GDP growth, also by the growing number of EU countries, which recorded a negative growth rate in subsequent quarters of 2008 and 2009. In the 1st quarter of 2008, two countries recorded a negative growth rate. In the 4th quarter, their number increased to 19, and in the 1st quarter of 2009, it increased to 23. In the light of the information analysed above, the economic situation of Poland is favourable. In all the presented quarters, the GDP growth rate in our country was positive, although a decreasing tendency of GDP growth was observed (*Ocena sytuacji gospodarczej*, p. 5).

Table 1. Changes in GDP in the EU-27 and in some EU countries in 2008 and 2009 (in %)

	EU-27	4 largest countries				Poland	Number of countries with growth rate	
		Germany	France	Great Britain	Italy		Positive	Negative
1st quarter of 2008	2.4	2.9	1.9	2.5	0.4	6.4	24	2
2nd quarter of 2008	1.8	2	1	1.8	-0.3	5.6	22	4
3rd quarter of 2008	0.7	0.8	0.1	0.5	-1.3	4.9	20	6
4th quarter of 2008	-1.7	-1.8	-1.6	-1.8	-3	2.6	7	19
1st quarter of 2009	-4.8	-6.7	-3.4	-4.9	-6	1.7	3	23
2nd quarter of 2009	-4.8	-5.9	-2.6	-5.5	-6	1.4	1	19

Source: Prepared by the author on the basis of: *Ocena sytuacji ...*, p. 6.

The economic situation in the EU-27 was affected the most by the four largest states (Germany, France, Great Britain, and Italy), the share of which in the EU GDP exceeds 60% (the share of Poland is ca. 2.5%). The intensification of the decreasing growth rate trend in subsequent quarters of 2008 and 2009 was recorded in each of these states until the 1st quarter of 2009, inclusively (*Ocena sytuacji gospodarczej ...*, p. 5).

The intensification of the global economic crisis in the EU-27 is accompanied by the constantly growing number of people who remain unemployed. In the period from January to September 2008, the harmonised unemployment rate was growing at a relatively slow pace (from 6.8% to 7.1%). A significant acceleration was recorded no sooner than from October 2008. At the end of July 2009, the unemployment rate increased to 9.0%.

In January 2008, the unemployment rate in Poland amounted to 8.0 and exceeded the unemployment rate in the EU-27. In turn, from January until October 2008, the rate decreased to the level of 6.8%, and in July 2008, the unemployment rate in Poland and in the EU-27 aligned at the level of 7.0%. Since August 2008, the unemployment rate in Poland - despite its growth - has invariably remained at a level lower than in the EU-27. At the end of July 2009, the rate amounted to 8.2%. Among the largest EU-27 countries, the lowest rate of unemployment occurs in Germany, and the highest - in France (respectively, 7.7% and 9.8% in 2009) (*Ocena sytuacji gospodarczej ...*, p. 12, see also: Total unemployment rate).

In January 2010, the unemployment rate in Poland reached the threshold of 12.7%.

The financial crisis caused deterioration of the main macroeconomic indicators in economies all around the world. In Poland, the largest slowdown in the pace of GDP growth could be noticed in the last quarter of 2008. Since the beginning of 2008, we can clearly see signs of economic downturn through stagnation or deterioration of the size of particular GDP components.

The financial crisis led to economics crisis: US economy shrank, in Europe many people lost their job or it became to more difficult to find a new job (Macdonald, 2012, p. 12).

Shaping of macroeconomic indicators after the financial crisis, illustrated with the example of Poland and the EU.

The financial crisis was global. Although it began in 2008 or even earlier (the difficulties on the financial markets began in mid-2007), its consequences were visible no sooner than in 2009 (Babcak, 2010, p. 55). A crisis is a situation that cannot be reversed, the effects of which cannot be undone. However, by means of the law – mainly the financial law – we can prevent its negative consequences and try to minimise them (Babcak, 2010, p. 60). In the analysis of the macroeconomic situation after the financial crisis revealed its most severe consequences, the examination will cover the period of 2011–2016.

When observing the GDP growth rate on the example of the EU-28 in the years 2011–2016, we may note an initial decrease in the growth rate, until 2012 inclusively, to the level of -0.5% of GDP, and then a change of this tendency and an increase in the growth rate from 0.3% of GDP in 2013 to 1.9% of GDP in 2016.

The situation of particular countries: Germany, France, Italy, and the UK, also remains favourable. We can observe an increase in GDP in particular countries. In the period of 2011–2016, Germany, France and the UK did not record a negative GDP growth rate, while Italy managed to recover from the negative values and have been recording a positive GDP growth rate since 2014.

In Poland, the GDP growth rate remains positive, although it was reduced in 2016.

Out of the 13 countries with a negative growth rate in 2012, only one remained in 2015 (Greece). On the other hand, in 2016, none of the EU Member States recorded a negative GDP growth rate, which proves the improving economic situation of particular countries and their deeper integration.

Table 2. Changes in GDP in the EU-28 and in some EU countries in 2011–2016 (in %)

	EU-28	4 largest countries				Poland	Number of countries with growth rate	
		Germany	France	Great Britain	Italy		Positive	Negative
2011	1.7	3.7	2.1	1.5	-1	5	24	4
2012	-0.5	0.5	0.2	1.3	-2.9	1.6	15	13
2013	0.3	0.5	0.6	1.9	-1.7	1.4	16	12
2014	1.7	1.9	0.9	3.1	1.4	3.3	25	3
2015	2.2	1.7	1.1	2.2	3.2	3.8	27	1
2016	1.9	1.9	1.2	1.8	3.2	2.7	28	0

Source: Eurostat, *Real GDP growth rate*, www.eurostat.eu

The receding, strongest wave of the crisis is accompanied by a drop in the unemployment rate. In the EU-28, in 2013, the unemployment rate was at the level of 10.9% as compared to 8.6% in 2016. On the other hand, in April 2017, the unemployment rate amounted to 7.8% and is the lowest measure for the whole EU since 2008.

A similar situation takes place in the case of the Eurozone, where the unemployment rate dropped from 11.4% in 2012 to the level of 10% in 2016, and still shows a downward trend.

The situation in Poland is similar. The unemployment rate at the end of 2016 was at the level of 6.3% as compared to 10.3% in 2013 (see more: Kalinowska, p. 21–40).

Among the largest EU-28 countries, the lowest rate of unemployment is recorded in Germany, and the highest – in Italy (respectively, 4.1% and 11.7% in 2009).

Table 3. Changes in the unemployment rate in the EU-28 and in some EU countries in 2011–2016 (in %)

	EU-28	4 largest countries				Poland	Eurozone
		Germany	France	Great Britain	Italy		
2011	9.7	5.8	9.2	8.1	8.4	9.7	10.2
2012	10.5	5.4	9.8	7.9	10.7	10.1	11.4
2013	10.9	5.2	10.3	7.5	12.1	10.3	12
2014	10.2	5	10.3	6.1	12.7	9	11.6
2015	9.4	4.6	10.4	5.3	11.9	7.5	10.9
2016	8.6	4.1	10.1	4.8	11.7	6.3	10

Source: Eurostat, *Total unemployment rate*, www.eurostat.eu, <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdec450>

As shown by the following statistical data (Table 4) pertaining to the flow of foreign direct investments, the whole European Union suffered a considerable fragmentation of financial markets caused by the financial crisis and the debt crisis of 2007–2011. It should be noted that, as a result of the inflow of FDI to the financial sector, its competitiveness and the effectiveness of financial institutions increase (Bukowski, 2011, p. 34). As a consequence, it leads to international integration of financial markets, financial development and, ultimately, to economic growth.

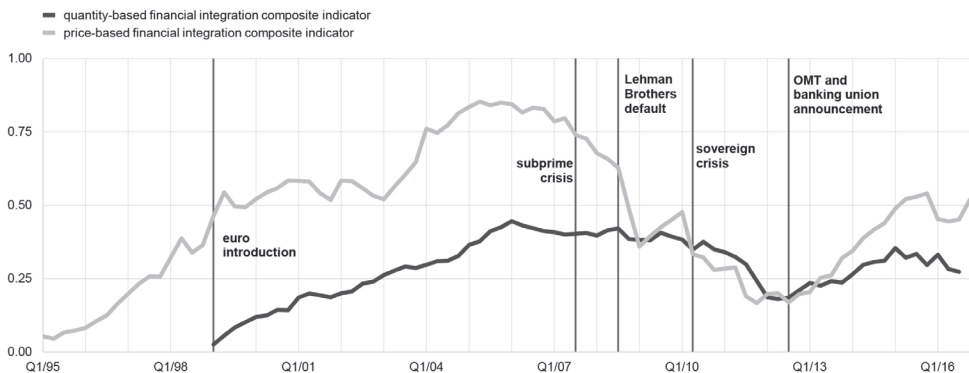
Financial integration contains an important aspects of financial development, expanding the available set of economic opportunities offered by present market boundaries. Financial innovation and introduction of new financial instrument for example can create a new types of finance (Faruqee, 2007, p. 25).

Table 4. Market Integration – Foreign Direct Investment intensity in 2010–2012 (% of GDP)

	EU-28	4 largest countries				Poland
		Germany	France	Great Britain	Italy	
2010	2.1	2.7	1.9	1.9	1	2.2
2011	3.5	1.9	1.6	2.9	2	2.8
2012	2.4	1.4	1	2	0.2	0.7

Source: Market Integration – Foreign Direct Investment intensity, www.eurostat.eu, <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00124>

Another integration trend began in 2012 (Fig. 1). According to the indicator based on prices and quantity of composite indicators, the average degree of financial integration between monetary markets, bonds, capitals, and banks demonstrated moderate growth in 2015 as compared to the situation at the end of 2014. Despite the fact that some pricing measures relating to financial integration on bond markets and capital markets showed substantial disproportions in 2015, the situation on monetary markets seems to be substantially unchanged since 2014 (*Financial integration in Europe*, May 2017, p. 10).

**Figure 1. Price-based and quantity-based financial integration composite indicators**

Source: *Financial integration in Europe*, May 2017, p. 10., <http://www.ecb.europa.eu/pub/pdf/other/ecb.financialintegrationineurope201705.en.pdf?1c8bc127d44dc2fc5ce32d226df9b7dd>

As shown on the chart above, financial integration composite indicators based on prices and based on quantity demonstrate improvement in integration. The approximation of both indicators that was also recorded constituted a response to the financial shocks appearing on the market.

To sum up, the integration of financial markets may contribute to the achievement of a number of benefits, i.e.: dynamisation of the GDP growth (Iwanicz-Drozowska, 2007, p. 15), increase in the economic growth, reduction in the unemployment rate (Kosztowniak, 2009, p. 75), stimulation of investments, as well as economic development.

As explained by S.I. Bukowski, economic growth provides the funds that stimulate the development of financial markets and, in turn, this process accelerates economic growth through allocation of capital (Bukowski, 2009, p. 16).

Conclusions

The integration of financial markets in the European Union is a desired and necessary process. However, it should be kept in mind that this process brings both certain benefits, as well as hazards. The benefits include: growth of attractiveness of European markets, increase in competitiveness, increase in availability and diversity of products and services. The hazards include the risk of a financial crisis. It is caused by the fact that the period of economic growth or financial integration lacks proper institutional or regulatory adjustments, which creates the risk of a crisis.

This deregulation of financial markets reduces the possibility of control of the financial market. Such a situation occurs on the foreign exchange market, which does not have a uniform institutional and organisational structure. The above discrepancy in the legal systems of countries belonging to the Eurozone is not beneficial to the integration of financial markets.

The integration of financial markets in Europe within the scope of foreign exchange markets is based upon the theory of optimum currency areas (Bukowski, 2007, p. 28 et seq). As a result, the occurrence of synchronisation between the business cycle of the monetary union and the cycle of the integrating country minimises the frequency of asymmetric shocks. However, this interdependence in the development of countries does not necessarily have to bring benefits. It is important to ensure that the negative results of the integration do not gain advantage over the benefits. Therefore, the introduction of a common currency will be beneficial, if a given area is covered by an optimum currency area (Piech, 2009, p. 63–65) and thus also by synchronisation of business cycles of the integrating countries.

Stability and security of the financial system constitutes a common good. Disturbances in the operation of the financial system and disruption of the effectiveness of provision of financial intermediation services adversely affect the situation of companies and households.

A special responsibility for the stability of the financial system is borne by: institutions supervising the financial sector, institutions guaranteeing deposits, and the central bank as the lender of last resort. They form a safety network, the main objective of which is to limit the systemic crisis, which may arise when the crisis of one financial institution transfers to other market participants and disturbs the functioning of the entire financial system. Restoration of trust in the financial system is then very expensive and may cause long-term negative consequences for economic development.

EU countries have various solutions with regard to supervision over financial markets. Not all are subject to supervision and regulation. The need to supervise and regulate sectors results from the occurrence of information asymmetry. On some markets, entities being the parties in transactions do not have equal access to all essential information. Such a situation creates the need for protection (Krawczyk, Przybytnowski, 2010, p. 83).

In conclusion of the above considerations, the integration of financial markets after the crisis period has not slowed down. Apart from the statistical data considered in the present article, indicating the strengthening of the integration of financial markets, the market integration is also proven by the increased number of people holding accounts with foreign banks, the increased number of foreign bank branches in other countries, the founding of daughter companies in countries other than the country of origin, or the fact of subsequent countries joining the Eurozone and the reduction of indebtedness of countries belonging to the Eurozone.

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