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SMART SPECIALIZATION AS A WAY OF STRENGTHENING THE INNOVATION POTENTIAL OF REGIONS

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Abstract. The subject of the work is the concept of smart specialization adopted in the European Union in 2010 and particularly its implementation in Poland. The aim of this work is to identify and present the concept of smart specialization and the rationale for its establishment and define the role of this concept as a tool to strengthen the innovative potential of the regions in Poland. The material was taken from the European Union documents and adopted by the regional governments in Poland strategies developed for 2014–2020. The paper presents the origins, theoretical basis and essence of the concept of smart specialization, there is discussed the role of smart specialization in creating strategies and development policies and strengthening the innovation capacity of countries and regions and proposed by the Polish regions smart specializations for 2014–2020. Smart specialization programs in Poland are on the one hand a reaction to the possibility of obtaining funds from the European Union, on the other hand a new opportunity for the real reconstruction of standard strategy of regional development.

Key words: smart specialization, development strategies, regional development, innovation, regional competitiveness

INTRODUCTION

At least for 20 years Europe seeks to speed up economic development and catch up with global competition in most developed countries of the world. In 2000 the European Union adopted the so-called Lisbon Strategy, which, through the development

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of research, implementation of innovation and knowledge based economy on had to overcome the distance of the Member States of the European Union in the field of productivity to the United States, Japan and other rapidly developing countries of the world. The failure of this strategy, despite attempts to revise in Gothenburg and the phenomenon of the economic crisis that swept through Europe at the end of the first decade of the XXI century, posed the need for a new perspective on strategy and development of Europe and creative modification of its objectives and mechanisms of development. An important word in this regard was the emergence of the concept of smart specialization (SS) of countries and regions. This concept was officially adopted by the European Council in June 2010 and was published in the document of the *European Union Europe 2020 – a strategy for smart, sustainable and inclusive growth* whose implementation is guided by the achievement of certain benefits such as increased employment, increased R&D investment, increasing energy efficiency and reducing the size of poverty [EC 2010]. The concept of smart specialization has been incorporated into other strategic development programs for the financial perspectives for the period until 2020 and sometimes years dating to 2030. The Member States and regions, by the package of EU regulations concerning the use of European Structural Funds, were to adopt this concept in the work of preparing them to act within the framework of the 2014–2020 financial perspective.

Poland, as a country and provincial governments, preparing strategic documents of regional development in the 2014–2020 financial perspective included the concepts of SS strategies for development, especially in programs of research and innovation. Although in Polish conditions, the concept of SS sounded not too familiar, its use was intended to achieve two objectives. The first goal, of a systemic nature, was to use this concept as a way to transform the economy, improving its efficiency and modernization by strengthening innovation of enterprises, enhancing and extending the offer of innovative products and services also improving the functioning of socio-economic systems in regions. The second goal of a practical nature was connected with the search for acquisition opportunities and make full use of European funds for the development of these areas that could have a positive economic effects [Baran and Hajduk 2014].

THE AIM AND METHODS

The aim of the paper is determining and presenting: the concept of smart specialization and circumstances of establishing them; the role of smart specialization in strengthening the innovation potential of countries and regions; the SS accepted by the regional governments for the years 2014–2020 in Poland. The basic materials for research are European Union documents related to the regional strategies of innovation, mainly documents of third generation as well as the regional and country documents elaborated in Poland for regional development strategies in the frame of the EU programming period 2014–2020. Analysis of documents and subject literature is the main method of the study.

GENESIS, THEORETICAL BASIS AND ESSENCE OF THE CONCEPT OF SMART SPECIALIZATION

The concept of SS emerged in the European Union to seek opportunities and to accelerate the development of the Member States, when in the first decade of the XXI century, in an emergency of the financial crisis, it became evident that adopted in 2000. The Lisbon Strategy would not bring the expected effects of reducing the development gap between Europe and the United States especially in the field of productivity and innovation. The concept was developed in 2005 by an expert group Knowledge for Growth by the European Commissioner for Research and Innovation of the EU, in which an important role played academics involved in regional development. The initial outline of this concept was formulated in 2008 and then developed in 2009–2010 during the preparation of the new EU economic strategy for the next decade [Kardas 2014]. The concept was published by the European Commission in March 2010. Officially adopted by the European Council in June 2010 in the form of the *Europe 2020 – a strategy for smart, sustainable and inclusive growth* [EC 2010]. Since then the concept of SS has become a major concern for both the sphere of science and public administration and business.

At the core of the development of a new concept of SS was the use of well-known theoretical concepts related to territorial and regional development developed by science as well as practical experience gained during many years of cooperation between the EU and regions, in particular conclusions from the evaluation of EU regional policy and the evaluation of the effectiveness of national and regional development strategies, especially regional innovation strategies. The concept of SS has become a new concept to formulate an innovation strategy for countries and regions and knowledge based economy. In the development of this approach outweigh the practical aspects arising from its use for the formulation of strategic development programs. For the purposes of the practice of preparing and implementing strategies and plans for development policy were developed basic assumptions and recommendations to countries and regions, and were prepared information and institutional forms of support. Among others, they took the form of *Guide to Research and Innovation Strategy for smart specialization* (RIS3) or *Platform of Services* (S3) that support the regions in their efforts at development and implementation of SS strategies.

The idea of smart specialization is based on the assumption that no Member State of the EU or any region can achieve satisfactory results in all areas of the economy and especially in the area of science, technology and innovation [Pilarska 2014, Baran and Hajduk 2014], but individual countries and regions have a specific potential that can differentiate in a certain area. Taking into account the internal and external circumstances and available resources the acceptance of the concept of SS provides opportunities to achieve economic growth, not only by the countries and regions that are leaders in the field of science and technology, but also by those that do not stand out specially, but adequately resourced will focus their efforts on key areas and unique features of their assets. The leading regions in the field of science and technology can invest in the development of general purpose technologies, or a combination of different technologies to apply. Regions with less scientific and innovative potential, showing a tendency to

follow the leading regions should invest in it to best use general-purpose technologies in the areas important for the economy of the region. The concept of SS has therefore indeed two sides faces. The first is the need to focus the activities in selected areas (domains) just to exploit the existing potential for knowledge creation which scope and spread is becoming an important driving force for innovation and production growth in the region. The second consists of synergy of attention and efforts on specific areas (domains) in order to form distinctive and original areas of expertise in the region for the future [Foray et al. 2011].

Authors of the concept of SS are convinced that it can be particularly beneficial for countries and regions which are not leaders in the field of science and technology when they focus efforts on key areas, unique resources and priorities in order to achieve certain critical mass, which will bring economies of scale and positive externalities associated with the creation and use of knowledge. From the concept of SS, it is expected that they will lead to a greater variety of regions that are increasingly interdependent. The essence of this concept is to discover entrepreneurship, both at local, regional and national levels, which should reveal owned assets and make better use of endogenous resources [Pilarska 2014].

The concept of SS has been enthusiastically received by the creators of economic policy and had in fact become the basis for creating a new generation of research and innovation policy. It has been seen as new opportunities to support research and innovation. Smart specialization has been recognized as an important element of smart growth, which includes businesses, research centers, collaborating institutions and public authorities and local government. Development of the concept of smart specialization was initiated by the European Commission for the purpose of conducting economic policy in particular regional and innovation policy, but its shape was formulated mainly by academia. The concept is an example of demand posed by the economic and political practice addressed to representatives of science who use the rich theoretical achievements of economics, economic geography, regionalism and spatial planning, have created the concept of development in the regions which is supportive and attractive for the EU administration and public administration and local government in the Member States.

THE ROLE OF SMART SPECIALIZATION IN CREATING STRATEGIES AND DEVELOPMENT POLICIES

Development, implementation and deployment of smart specialization strategies should take the form of SS. It means, therefore, a strategic approach to economic development through targeted support for research and innovation. The process of creating the strategy includes the steps of creating a vision, identification of competitive advantage, prioritizing strategies, formulation and use policies in order to maximize the knowledge based potential of development of each country and region [Stawicki and Wojnicka-Sycz 2014]. Such a strategy should identify ways and means to the relevant territorial unit grow and achieve certain objectives in the most favorable possible conditions for it while maintaining openness to the outside and cooperation with other entities. The creators of the concept of smart specialization believe that an effective strategy should first focus

on the process of discovery entrepreneurship and niches, which should be the basis of specialization based on the assets of knowledge, research and innovation inherent in both the public and private sphere.

The fundamental weakness of Europe's international competitiveness that are being addressed by implementing the concept of SS, authors completed the excessive investment fragmentation and lack of coordination of research and innovative projects. Countries and regions not sufficiently benefit from the achievements earned by others and imitating the leaders waste resources on inadequate to the needs and possibilities projects and activities [Godlewska 2013]. Choosing a small amount of key areas where there are grounds for specialization can help countries and regions occupy a unique position or a proper place in the systems between different countries and regions. The choice of economic specialization, using the innovative potential and resources of knowledge and skills should translate into faster economic growth and strengthening the competitiveness of the region. Smart specialization should create and implement enterprise, research centers, collaborating institutions and local public authorities.

The greatest expectations related to the implementation of the SS reposed in areas with the greatest development potential and in key technologies and development processes that stimulate innovation and strengthen the competitiveness of the area. The key technologies suit systemic importance, because they allow the formation of innovative processes, goods and services in all sectors of the economy. The key technologies in the EU included micro- and nano-electronics, nanotechnology, photonics, advanced materials, industrial biotechnology and advanced manufacturing technologies [EC 2012]. For proper construct of a strategy for SS it becomes important to identify the main chains of links between individual economic areas and leading technologies that may create a sort of axis of smart specialization [Godlewska 2013]. As a result, the SS should come to the technological modernization of existing industries and other sectors, including the development of specific modified technology in the sector. Smart specialization should lead to the transformation of sectors towards activities with higher added value [Stawicki and Wojnicka-Sycz 2014].

As required by RIS3 implementation of the strategy for SS may take the form of one of the following processes:

- Transformation, which marks the transition from the current to the new sector based on cooperation between institutions and companies focused on the use of resources and competences.
- Modernization, which should be understood as the technological modernization of existing industry resulting in the development of specific applications of key technologies and supportive technologies and improving the quality and efficiency of the sector.
- Diversification indicating sustain potential synergies at the interface of the currently existing and emerging activities, which should be more attractive and profitable.
- Radical transformation, meaning rise as a result of the activities of R&D and Innovations of a new field, or a new sector using available resources and competences in the region.

Selecting one of these processes or shaping the structure of their use requires significant changes and severity of innovative processes in which the sphere of business, science and local authorities must engage.

The role of smart specialization to strengthen the innovative potential of countries and regions.

The adoption of the concept of SS is in fact an attempt to create a new generation of policy, research and innovation that goes beyond the classic investing in research and development and new technologies. The basic assumption of the concept of SS is increasing innovation and competitiveness of the regions on the basis of its endogenous potential and already operating sectors [Słodowa-Chełpa 2013]. The task of SS is creating the potential for innovation by stimulating grassroots activity and internal and international cooperation and targeted support, which could lead to the achievement of specific competitive advantage. Strategy of SS recognizes the role of the different forms of innovation and both technological as well as organizational innovation also social one and it applies to both high and modern technology sectors and traditional technologies. Innovation strategy (IS) implementation should lead to the technological modernization of existing sectors of the economy through the development of specific applications of major technologies and key supportive technologies in the sector.

The creators of the concept of SS offered four main principles on which strategy should be based [Nazarko 2014]. They are as follows:

- Selection of a limited number of priorities for R&D and innovation taking into account available resources and place in the international specialization. The analysis of strengths and weaknesses and the opportunities and constraints of development is useful to choose and define priorities.
- Discovering, emergence and stimulation of entrepreneurial talents and strengths by adjusting the potential of R&D, technology and innovation to meet the needs of the region and its socio-economic features.
- The development of network systems and clusters at a high level and creating a space for the formation of intra-regional and external cross-sectoral and inter-regional links.
- Effective management of the innovation system based on cooperation and public–private partnerships.

It is about inclusion in the processes of pro-innovation not only research institutions, businesses and public authorities but also customers and users of innovation. To facilitate the emergence and assessment of SS, there was proposed the establishment of experimental platforms. Based on these principles, we can take concrete steps to formulate and design a practical method of selection of SS [Foray et al. 2012, Nazarko 2014, Piątkowski et al. 2014].

World Bank recommends in developed for Poland review of national and regional strategies, research and innovation using a range of methods that can be helpful when choosing a SS as [Nazarko 2014, Piątkowski et al. 2014]:

- Analysis of the scientific and technological potential and its adaptation to the economic and social system of the region. An attempt to highlight the unique areas and economic characteristics of the region.
- Evaluation of networking and searching for clusters and other links forming local and regional innovation systems.

- Forecasting the future direction of changes and trends in the long term (foresight) and participatory creation of a strategic vision for the region.
- Market selection of strategies in regions with unrecognized competitive advantages carried out experimentally by the market with the support of local and regional authorities.
- Competitive selection useful in developed regions, which consists of competitive activity of companies using SS and creating grassroots strongly linked systems competing for funds with companies operating in different sectors of the economy.
- Case studies of existing business groups of economic specialization or value chains using different metrics and indicators of the level of development.
- Disclosure of potential centers of a sub-regional or local level in a spatial region, with quantitative and qualitative characteristics of having the capacity to attract innovative forms of management and development. This means taking into account the territorial approach to spreading innovation fit the specific character of selected areas of smart specializations.

The listed ones, as well as other methods used in the development of regional research and innovation strategies for SS offered by RIS3, are generally used in the creation of integrated, bottom-definable economic transformation programs under the name of *Regional innovation strategies* (RIS), wich are formed generally as supporting documents to already developed more elaborate *Strategy for the development of the regions* (SDR). Linking these two strategic documents was specified in the *Act on regional self-government*. RIS have been developed and updated in Poland not only to provincial regions, but often also for sub-regional and local systems.

Regional innovation strategies updating especially work on the design of smart specialization of regions for the period 2014–2020 introduced a new content and quality in strategic planning, different from the one that was applied for the period 2007–2013. The main difference relates to depart from the sectoral approach of the innovation process for cross-sectoral, integrated actions in building innovative potential. Another important feature is to move away from the focus of innovation policy on the development of enterprises to create a comprehensive and complementary innovation systems and innovative environment friendly to all participants in the value chain. They were also shifted accents in the implementation of the strategy from formulated tasks for greater focus on the effects of the strategies. Next to the *Strategy for the development of regions* and the *Regional innovation strategies* individual regions benefited from national programs such as the Enterprise Development Programme, National Programme of Research, Intelligent Development Operational Programms, Development of Eastern Poland Programme and others.

The development of SS by countries and regions became mandatory EU document entitled *Regional policy, contributing to smart growth in Europe* adopted in 2010. Europe 2020 programme aims at improving the conditions for innovation, research and development, promoting innovation and SS, increasing the availability and quality of information technology and removing obstacles to the development of small- and medium-sized enterprises [Camagni and Capello 2013].

SMART SPECIALIZATIONS OF POLISH REGIONS FOR THE YEARS 2014–2020

In Poland, smart specializations became the leitmotif to develop a strategy for development in the plane of innovation in the financial perspective for 2014–2020. For the development of such a strategy tended formal and legal conditions for obtaining EU funds for regional development objectives. Poland, however, did not adopt uniform national rules to develop a selection strategy and implementation of SS. Hence it is observed a great variety of methodological approaches, scope of content and method of defining smart regional specialization. In the absence of central coordination of the region, having the freedom, they submit inconsistent development and often poorly substantiated. One of the main weaknesses was often imprecise definition of IS in nature and scope, making it difficult to attempt evaluation and comparison between regions. It is also apparent lack of a clear consideration to the potential strengths of each province and links with other regions [Godlewska 2013]. The individual regions can benefit from the EU recommendations contained in the RIS3, which proposed the approach containing the following six elements of the strategy:

- Analysis of the regional context and capacity for innovation.
- Establishing a strong governance structure involving different stakeholders.
- Developing a common vision for the future of the region.
- Selecting a limited number of priorities of regional development.
- Preparing an appropriate pledge of policies and development programs.
- Establishment of appropriate mechanisms for monitoring and evaluation.

In formulating smart specialization by regions some help from the national level could be a National Research Programme adopted in 2012. Containing assumptions of science and technology policy and innovation policy, in which were adopted seven priority research areas: new technologies in the field of energy; civilization diseases; new drugs and regenerative medicine; advanced information technology, telecommunications and mechatronics; modern materials technologies; environment, agriculture and forestry; socio-economic development of Poland under globalized markets; security and defense of the state [Nowak 2014]. The study *Industry technology foresight in Poland – in sight 2030* was also helpful in determining the SS in the regions. Its results were published in 2011. This prognostic study indicated six groups of key technologies for the development of industry in Poland. These included: advanced manufacturing systems, information and telecommunications technology, industrial biotechnologies, nanotechnologies, microelectronics, photonics. At the central level with delay was accepted the development of the *National strategy for smart specialization*, which entered the stage of inter-ministerial consultations in 2014.

Poland has aligned itself to the measures taken in the European Union initiatives to accelerate economic growth by knowledge based economy, innovation implementation and application of modern technologies leading to raise the level of competitiveness. Both at national and regional levels have been initiated actions related to the choice of smart specialization identified as a way of achieving national and regional development goals. However, uncertainty remains whether the choice of SS in the regions is treated as a real

opportunity to accelerate the development or as reparation to the formal requirement to have adequate strategic documents necessary for obtaining EU funds.

Due to the lack of central coordination regional SS are highly varied in form, content, the method used to develop and suitability for use in the real regional policy. All this make it difficult to compare and assess in substantive and formal way. Some of the region did not avoid a sectoral approach to the selection of SS because of the difficulty in discovering the areas of entrepreneurship, which should focus on IS or general purpose technologies, within which should be sought strengths and capabilities of regions (domains), on which actions should be focused.

Like the national strategy falls within the general framework proposed by the EU's guide RIS3, so also SS of regions in Poland generally do not go beyond the framework set by the EU strategy and the strategy of the central level. At the same time it can be concluded that national and regional IS do not cover all the conditions imposed by the European Commission. Smart specialization of regions in Poland have a tendency to adopt follow strategies of the leading regions and tap the specialization areas of modern high technologies and advanced innovation processes. It is difficult to assess how these ambitious arrangements are realistic and attainable.

Among elected by the regions SS often come specializations within the medicine and health services, information and communication technology, biotechnology and the bioeconomy, energy, including renewable energy, engineering and environmental protection. Quite often they pointed to the chemical and pharmaceutical technology, logistics, quality of life and various forms of industrial and materials science. Less common are specializations in the field of construction, social services, maritime and water technologies.

It seems that the weakness of developed strategies for the implementation of SS in Polish regions is the lack of or poorly functioning institutions that can initiate or take over implementing them in practice and poor cooperation between stakeholders in the innovation process. They show up at the shortcomings of social capital in local systems and sub-regions. To ensure the success of SS strategies for the regions it is also necessary to activate the activity of local governments, providing incentives and economic support, professionalisation of participants in the innovation processes and social support systems of local and regional authorities. Smart specialization of regions have become a necessity not only for pragmatic reasons when applying for EU funds for the implementation of development projects, but also because of the possibility of creating real opportunities for a better use of existing potential and accelerate the development of the region and increase its competitiveness in national and international scale.

CONCLUSIONS

- The smart specialization of regions is a new concept, after not successful implementation of Lisbon Strategy, for establishing the knowledge based economies and implementation of innovation processes as a base for economic growth.
- The smart specializations in Polish regions prepared with the use of different methods are highly differentiated according to their contents and numbers of selected speciali-

zations. They play different roles in development strategies of regions. In most cases they are closely linked with programmes of national smart specializations.
- The smart specialization of regions are in most cases strongly linked with programmes for innovation creation and implementation in enterprises and regions.
- Programmes for smart specialization and their implementation in regions are both; a routine reaction of the EU and member countries in looking for development strategies and a new chance for real reconstruction of standard strategies in the regions. These strategies create also possibility for showing the importance of regional governments as the coordinating organs for development programmes in the regions.

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INTELIGENTNE SPECJALIZACJE JAKO SPOSÓB WZMACNIANIA POTENCJAŁU INNOWACYJNEGO REGIONÓW

Streszczenie. Przedmiotem pracy jest koncepcja inteligentnych specjalizacji przyjęta w Unii Europejskiej w 2010 roku, a zwłaszcza jej wdrożenie w Polsce. Celem pracy jest określenie i zaprezentowanie koncepcji inteligentnej specjalizacji oraz przesłanek do jej ustanowienia, a także określenie roli tej koncepcji jako narzędzia wzmocnienia innowacyjnego potencjału regionów w Polsce. Materiał zaczerpnięto z dokumentów Unii Europejskiej oraz przyjętych przez polskie samorządy regionalne strategii opracowanych na lata 2014–2020. W pracy przedstawiono genezę, podstawy teoretyczne i istotę koncepcji inteligentnych specjalizacji, omówiono rolę inteligentnych specjalizacji w kreowaniu strategii i polityk rozwojowych oraz we wzmacnianiu potencjału innowacyjnego krajów i regionów oraz proponowane przez polskie regiony inteligentne specjalizacje na lata 2014–2020. Programy inteligentnych specjalizacji w Polsce są z jednej strony reakcją na możliwości pozyskania środków finansowych z Unii Europejskiej, z drugiej zaś nową szansą na rzeczywistą rekonstrukcję standardowych strategii rozwoju regionów.

Słowa kluczowe: inteligentne specjalizacje, strategia rozwoju, rozwój regionalny i innowacyjność

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OVER-INDEBTEDNESS OF HOUSEHOLDS IN POLAND AND ITS DETERMINANTS

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Abstract. The aim of this study is to identify determinants of over-indebtedness of Polish households, measured by negative margin. The method of logistic regression was applied in order to achieve the main objective of the study. The source material was individual data of the *Household Budget Survey in 2011*. The survey was conducted by Central Statistical Office of Poland (GUS). The research results show that over-indebtedness of Polish households, measured by negative margin, is most influenced by: the age and education level of the household head, belonging to a socio-economic group, biological type of family and household income.

Key words: household over-indebtedness, socio-economic determinants, logistic regression, Polish households, measures of over-indebtedness

INTRODUCTION

Nowadays indebtedness is something natural, accompanying households in everyday life [Haas 2006]. The phenomenon of households indebtedness is very common in developed countries with modern financial systems. Over the last decades the attitude to a credits has changed considerably and nowadays it has become a part of a modern consumer society [Lea et al. 1995]. Households in some way accustomed to live on credit, and treat it as a common source of financing their needs and desires [Raijas et al. 2010].

However, a dynamic increase of both, the volume and value of credits granted to households can contribute to the creation of over-indebtedness if households' finances are mismanaged and if their financial awareness is low and financial education is inappropriate [Świecka 2008, 2009, Bywalec 2009].

Over-indebtedness is a relatively new term, not having a single definition. So far, there is no general agreement on the definition of over-indebtedness, how to measure this

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phenomenon and where is the border between indebtedness and over-indebtedness [Betti et al. 2007]. As noted by OXERA [2004], many analysis concerning over-indebtedness focus on construction of various types of measures, with frequent omission of a clear definition of over-indebtedness.

Schicks [2010] emphasizes that the literature of over-indebtedness not always distinguished the definitions from measures or indicators. Disney et al. [2008] believe, that although there is no agreement on the definition of over-indebtedness, this term should not be equated with high levels of debt. However there is no agreement in the literature about which is the best indicator to study the over-indebtedness [Bryan et al. 2010, Russell et al. 2011]. Despite the fact that there is no universally accepted definition of over-indebtedness, this phenomenon is often treated as a problem with the repayment of financial liabilities.

At the European level many attempts were made to characterize the phenomenon of over-indebtedness using various measures. For the measurement of this phenomenon, the European Commission proposes to use three models (Fig. 1): objective, subjective and administrative [Betti et al. 2001, 2007, Świecka 2008, 2009, Russell et al. 2011].

Objective ratios are the measurable, based on quantitative data. They include such measures as the consumption/income ratio, the debt/asset ratio or the debt payment/income ratio, describing the possibilities of debt repayment [Betti et al. 2007].

Objective measures also include the ratio based on arrears (arrears indicator). A house-hold is considered to be over-indebted if it has arrears in credit repayment and/or paying liabilities connected with flat maintenance exceeding three months [Fondeville et al. 2010].

The subjective model assumes that household members know their own financial situation the best. Thus, subjective measures take into account the views of families concerning debt repayment problems. A household is over-indebted if it assumes that debt repayment constitutes too large a financial burden [Kempson 2002, Gumy 2007].

Administrative measures of over-indebtedness, in turn, are based on official data concerning the formal procedures of acting in over-indebtedness cases.

One of the objective measures of household over-indebtedness is margin [Johansson and Persson 2006, Zajączkowski and Żochowski 2007]. Margin is the amount that stays

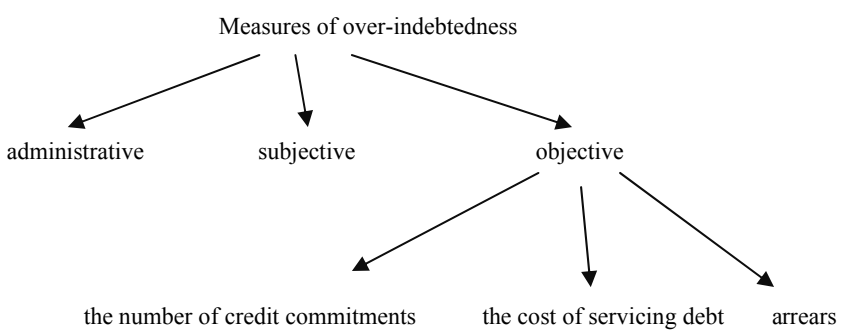

Fig. Measures of household over-indebtedness
Source: Own work.

in a household after deducting current income by the amount allocated for debt repayment and other fixed expenditures. Margin can be determined by basic types of expenditure method – household income is reduced by the amount of real incurred fixed expenditures such as rent, energy and by expenditures on basic goods and services such as food, transport, housing, water. The negative margin may indicate financial problems of household. It means an inability of household to repay debt and basic expenses from a current income [Zajączkowski and Żochowski 2007].

Objective measures of over-indebtedness are generally considered as more accurate and reliable. Despite this, many researchers based their analysis on subjective measures, claiming that the household is the best expert of their financial situation [Schicks 2010]. On the other hand, the undoubted disadvantage of subjective measures is that it depends on individual interpretation and feelings of the respondents, which differ between individual households, as well as between countries [Fondeville et al. 2010].

AIM OF THE PAPER, MATERIAL AND METHODS

The aim of this study is to identify determinants of over-indebtedness of Polish households, measured by negative margin. The study was based on data from the *Household Budget Survey in 2011*, which was conducted by Central Statistical Office of Poland (GUS). The study involved 37,375 households, of which 30% were indebted. Analysis was performed on indebted households with the use of logistic regression. Logistic regression is a method used with the dichotomous dependent variable. Independent variables can be both qualitative and quantitative. This method is often used to examine the probability of occurrence of an event Y, provided the occurrence of events $x_1, x_2, \ldots, x_n$ [Stanisz 2007]. The logistic function that the logistic regression model is based on has the following formula [Stanisz 2007]:

$$P(Y) = \frac{e^{(\beta_0 + \beta_1 X_1 + \beta_k X_k)}}{1 + e^{(\beta_0 + \beta_1 X_1 + \beta_k X_k)}}$$

where:
$P(Y)$ – the probability that variable Y will equal 1 for the independent variable value X_k;
Y – dichotomous dependent variable;
X – individual socio-economic traits of the household and the head of the household;
β – structural parameters of the model.

The following dichotomous variables were used in a model:

- The variable assumes the value of 1 for over-indebted households (with negative margin),
- The variable assumes the value of 0 for households without problem with over-indebtedness (with positive margin).

In order to interpret the logit model an expression called the odds ratio is usually used, which is the ratio (*OR*) between the occurrence probability of a phenomenon and the probability that the phenomenon will not take place:

In order to estimate the parameters of logistic regression model a set of independent variables was assumed, which characterises different socioeconomic aspects of households. Then the variables were presented in Table 1.

Table 1. Independent variables assumed in logistic regression model

Trait (Independent variable)	Response categories[a]
Biological type of family	childless couples
	couples with 1 child
	couples with 2 children
	Couples with 3 or more children
	single-parent families
	couples with dependent children and others
	a single person with dependent children and others
	other
	single non-familial
Type of place	city with population over 500 thousand inhabitants and more
	city with population 200–499 thousand inhabitants
	city with population 100–199 thousand inhabitants
	city with population 20–99 thousand inhabitants
	city with population less than thousand inhabitants
	village
Age of the household head	25–34
	less than 24
	35–44
	45–54
	55–64
	over 65
Socio-occupational group	staff of private or public sector
	farmers
	self-employed
	retirees and pensioners
	living on unearned sources
Income	Quintile I
	Quintile II
	Quintile III
	Quintile IV
	Quintile V
Education household of the level head	primary school and lower
	vocational/middle school
	secondary
	higher education
Sex of the household head	man
	woman

[a]Reference categories marked in bold type.

Source: The authors' own compilation based on the *Household Budget Survey in 2011* [GUS].

In order to avoid collinearity in the estimation of logit model parameters selected categories of each qualitative variable were omitted, which in consequence led to the generation of a reference group in comparison with which the results were analysed [Daras and Jerzak 2005].

The reference group in logit models consists of the households where the heads of households are:

- man;
- aged 25–34;
- people with higher education;
- living in big cities with population over 500,000 inhabitants;
- staff of private or public sector;
- childless couples;
- with low income (quintile I).

RESULTS

As mentioned in the introduction, in 2011 in Poland, about every third household was indebted. Every tenth household repaying debts was over-indebted in terms of a negative margin. This means that their current income was not enough to cover basic expenses and debt repayment. Over-indebted households spend for debt repayment nearly 1,000 PLN per month (Table 2). The value of the regulated amount of debt in households with negative margin accounted for 13% of the total amount of debt service.

Table 2. Characteristics of over-indebted households (with negative margin)

The share of households in the total amount of debt service (%)	The share of over-indebted households in a numer of indebted households (%)	The value of repaid credits (PLN·month^{-1})			
		average	QI	QII	QIII
13	9.2	969	220	454	933

Source: The authors' own compilation based on Household Budget Survey in 2011.

This part of paper attempts to identify the strength and direction of impact of socio-economic traits on the over-indebtedness of Polish households. The results of logit model estimations are shown in Table 2. The variable assumes the value of 1 for over-indebted households (with negative margin) and the value of 0 for the households without problem of over-indebtedness (with positive margin). Presented model, due to the unbalanced research sample, takes into account the adjusted cut-off point (0.09). In addition, bold typed traits in Table 2 are reference categories in relation to which the interpretation of the results are made.

As a result of statistical insignificance one variable was eliminated from the model: sex of the head of household. Other variables, i.e.: the level of education, type of place, belonging to a socio-economic group, biological type of family, income and the age of the household head were statistically significant.

Overall classification accuracy of the model is quite high and amounts 77%. The model correctly classified 70% of over-indebted households and as much as 78% of households without problem of over-indebtedness. In the case of logit model a low level of pseudo-R^2 is determined by a large number of observations and binary variables [Gruszczyński 2002].

As shown in Table 3, one of the key factors influencing dealing with a debt service is the education level of household head. The data in Table 3 shows that the lowest risk of over-indebtedness measured by negative margin have households run by people with higher education, which constituted a reference group. The lower education level of household head, the greater is the risk of over-indebtedness. The households run by people with primary education or lower the had almost three times higher chances to be over--indebted than households run by people with higher education.

The reasons for this situation can be seen, among others, in higher-income of better educated people. The results of a research indicate that with an increase in the level of education increases also household incomes. Only 4% of households with at most primary education is in Quintile V of income, while among households with higher education this percentage is as high as 60%. Income in households of better educated people is able to fully cover both, the expenditure related to the basic functioning of household, as well as the repayment of debt.

The ability of households to service debt is relatively weakly differentiated by type of place. As indicated by the data in Table 3, a statistically significant difference was observed only in the households from small cities (with a population of 20–99 thousand). The likelihood of over-indebtedness was in these households almost 30% lower than in households from very big cities (over 500 thousand inhabitants).

The risk of over-indebtedness in the aspect of negative margin also differs in socio--economic groups. The lower chances of being over-indebted was characterized by households of staff of private and public sector, which constituted a reference group. In turn, the most vulnerable for over-indebtedness were households run by farmers, where the risk of a negative margin was almost five times higher than in households of staff of private and public sector. Statistically significant differences were also recorded in the households of self-employed. The risk of over-indebtedness in these households is more than a half higher than in households of staff of private and public sector.

Another factor determining household over-indebtedness in terms of negative margin is the biological type of family. The reference group constituted in this case, households of a pairs without children. As shown in Table 3, this group of households is much more threatened by over-indebtedness than other types. The exception here were single-person households, were the chances to be over-indebted is the highest. The risk of a negative margin was in their case almost twice higher than in households of couples without children.

As indicated by the parameters of the logit model, the probability of over-indebtedness decreases with the increase of the number of dependent children. In the households run by couples with one child the risk of over-indebtedness is about one third lower than in households run by couples without children. In households run by couples with two children it is almost half lower (45%), and households of couples with three or more children – more than half (57%) than in households of childless couples.

Table 3. The parameters of logit model (1 – households is over-indebted, with negative margin)

Variable[a]	B_i	Significance[b]	Significance level	exp (B_i)
Level of education				
higher		***	0.000	
primary school and lower	1.075	***	0.000	2.931
vocational/middle school	0.532	***	0.000	1.703
secondary	0.363	***	0.000	1.437
Type of place				
City with population over 500 thousand inhabitants and more		**	0.011	
City with population 200–499 thousand inhabitants	–0.053		0.758	0.948
100–199 Thousand inhabitants	0.092		0.599	1.096
20–99 Thousand inhabitants	–0.327	*	0.030	0.721
Below 20 thousand inhabitants	–0.303		0.064	0.739
Village	–0.005		0.970	0.995
Socio-occupational group				
Staff of private and public sector		***	0.000	
Farmers	1.591	***	0.000	4.910
Self-employed	0.448	**	0.006	1.565
Retirees and pensioners	0.132		0.285	1.141
Living on unearned sources	0.320		0.101	1.378
Biological type of family				
Childless couples		***	0.000	
Couples with 1 child	–0.402	**	0.006	0.669
Couples with 2 children	–0.592	***	0.000	0.553
Couples with 3 or more children	–0.838	***	0.000	0.432
Single-parent families	0.051		0.833	1.052
Couples with dependent children and others	–0.934	***	0.000	0.393
Single person with dependent children and others	–0.987	***	0.000	0.373
Other	–0.518	***	0.000	0.595
Single non-familial	0.685	***	0.000	1.983
Income				
Quintile I		***	0.000	
Quintile II	–1.277	***	0.000	0.279
Quintile III	–2.067	***	0.000	0.127
Quintile IV	–2.751	***	0.000	0.064
Quintile V	–3.373	***	0.000	0.034
Age				
25–34 years old		***	0.000	
Less than 24 years old	0.339		0.168	1.404
35–44 years old	0.183		0.163	1.200
45–54 years old	0.332	**	0.011	1.394
55–64 years old	0.687	***	0.000	1.988
65 years old and more	0.489	**	0.006	1.631
Constant	–0.168		0.420	0.845
N		11 111		
Cox's and Snell's pseudo-R^2		0.109		
Nagelkerke's pseudo-R^2		0.237		
Adjusted cut-off point		0.09		
Overall classification accuracy		77.1%		

[a]The bracketed and bold typed traits are reference categories.
[b]Symbols: *significant variables for p <0.05; **significant variables for p <0.01; ***significant variables for p <0.005.

In turn, the least threatened over-indebtedness are households of single people with dependent children and other persons and households of couples with dependent children and other persons. The risk of a negative margin was in these types of households more than 60% lower compared to the reference group (households of childless couples).

The study also indicate that one of the most important aspects of determining the way a households manage their budget, thus affecting the ability to service the debts, is household's income. The parameters of the logit model show that with the increase of income decrease the risk of over-indebtedness. The greatest chances for a negative margin was characterized the households with the lowest income (Quintile I), which formed the reference group. It can also be seen that with the increase of income, decreases the odds ratio, from 0.279 (for Quintile II) to 0.034 (Quintile V). This means that households with income of the second quintile were more than 70% less likely to be over-indebted than households of the poorest (Quintile I), and in the households with the highest income (Quintile V) chances for being over-indebted were reduced by as much as 97%.

A significant impact on the ability of household to service debt has also the age of the household head. Much more likely to be over-indebted in terms of negative margin, were households run by elderly people. The highest risk of over-indebtedness had households run by people aged 55–64. In these households the risk of a negative margin was almost twice as high as in households run by people aged 25–34 (reference group). In the households of the oldest people (over 65), the odds ratio was 1.63; while in households led by people aged 45–54 it was slightly lower and amounted 1.39. Other age groups showed no statistically significant relationship with over-indebtedness.

CONCLUSIONS

The research results show that over-indebtedness of Polish households, measured by negative margin is most influenced by the age and education level of the household head, type of place, belonging to a socio-economic group, biological type of family and income.

The following conclusions can be made on the basis of the conducted logit analysis:

1. Much more likely to be over-indebted in terms of negative margin, were households run by elderly people.
2. The lower the education level of household head, the greater is the risk of over-indebtedness measured by negative margin.
3. The problem of over-indebtedness is relatively weakly differentiated by type of place. In the households from small cities (with a population of 20–99 thousand inhabitants) the likelihood of over-indebtedness was lower than in households from very big cities (over 500 thousand inhabitants).
4. The lower chances of being over-indebted was characterized by households of staff private and public sector staff, whereas the highest chances for being over-indebted had the households of farmers.
5. Single-person households have the highest chances to be over-indebted among all types of families.

6. The probability of over-indebtedness decreases with the increase of the number of dependent children in a family.
7. With the increase of income decrease the risk of over-indebtedness.

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NADMIERNE ZADŁUŻENIE GOSPODARSTW DOMOWYCH W POLSCE I JEGO DETERMINANTY

Streszczenie. Głównym celem pracy jest identyfikacja czynników determinujących nadmierne zadłużenie gospodarstw domowych w Polsce, mierzone ujemnym buforem dochodowym. Cel został osiągnięty z wykorzystaniem metody regresji logistycznej. Dane źródłowe pochodzą z bazy danych Głównego Urzędu Statystycznego – *Budżety gospodarstw domowych z 2011 roku*. Wyniki badań wskazują, że głównymi czynnikami wpływającymi na nadmierne zadłużanie się polskich gospodarstw domowych są: wiek i poziom wykształcenia głowy gospodarstwa domowego, typ miejsca zamieszkania, przynależność do grupy społeczno-ekonomicznej, typ biologiczny rodziny oraz dochód gospodarstwa domowego.

Key words: zadłużenie gospodarstw domowych, czynniki społeczno-ekonomiczne, regresja logistyczna, polskie gospodarstwa domowe, miary nadmiernego zadłużenia

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FACTOR ANALYSIS IN DETERMINING THE SIMILARITY OF LOCAL REAL ESTATE MARKETS' CONDITIONS

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Abstract. Interest in research on the issue of real estate market similarity results from many practical problems, especially connected with land management and land administration. The authors assume that factor analysis, as a statistical method among multivariate analysis methods, can be a useful tool for the determining the similarity of local real estate markets' conditions. The authors exploited information from six variables describing local real estate markets to create two new independent main factors that, together, account for 80% of variability of the primary variables. Using factor analysis, it was possible to build a two-dimensional space in which the location of each real estate market can be described using the new main factors as coordinates. Although the practical research was conducted on chosen Polish cities in the Warmia-Masuria Province, the same methodology can be applied to other markets as well.

Key words: similarity, factor analysis, real estate market

INTRODUCTION

The economic development of each country depends largely on the proper development of the real estate market. According to Urbanavičienė et al. [2009], the growth or decline of the real estate sector considerably affects the general growth or decline of a country's economy. Rapid environmental change, globalization and international trade in open markets have an influence on the housing market, especially by affecting housing

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price level formation. The real estate market share in the global economy suggests the important position of this market in the economic processes of major economies [Venclauskiene and Snieska 2010].

In the classical approach, the real estate market [Dawidowicz et al. 2014] comprises a set of general rules and conditions for transferring property rights and concluding agreements which define the rights and obligations of property owners. This market also varies depending on the behaviors and actions of many actors, including elements of the surroundings. For this reason, it can be considered that the real estate market is a special type of market, with its own rules and far from the definition given by mainstream economics [Brzezicka and Wiśniewski 2013].

Following this view, Bełej [2013] defined the real estate market as a system comprising a set of elements and their attributes, and the set of relations observed between these elements. The set of elements contains all system components which determine all processes on the real estate market. These processes form a set of relations. Interactions between the analyzed set of elements and their attributes with the set of mutual relations take place in a strictly defined period of time. The dynamics of these interactions are determined by the dynamics of changes in the market environment, with varying strength, direction and intensity of such mutual interactions. The real estate market can receive signals from the environment, but, under specific circumstances, such signals can also be transmitted by the market. The above implies that significant changes in the legal, social, economic and political environment are drivers of change in sets of market elements and their attributes. This means that they contribute to real estate market development. Therefore, the market [Foryś 2011], together with its economic and social environment, forms a system of communicating vessels, in which stagnation in any segment and the lack of communication between the segments have a detrimental effect on the entire system.

Typically, a submarket is defined as a set of dwellings that are reasonably close substitutes for one another, but relatively poor substitutes for dwellings in other submarkets [Grigsby et al. 1987]. Some researchers have defined submarkets as specific geographical areas or administrative areas [Goodman 1981]. Others suggested that submarkets comprise all dwellings, irrespective of their location, which possess similar physical characteristics and represent relatively close substitutes to potential purchasers [Grigsby 1963, Dale-Johnson 1982]. Maclennan and Tu [1996] explain that both sectoral (structural) and spatial factors, separately or interactively, may generate submarkets. In the present paper, the authors decided to use the administrative borders of areas to identify the boundaries of submarkets, defined as the local real estate markets.

The analysis of a real estate market represents an important scientific basis for decision-making in spatial planning and real estate management, and designing appropriate public policies. Real estate market analysis provides guidance for the many decision makers involved in real estate development. It is an outgoing process that provides information during the predevelopment, acquisition, development, marketing, and disposition of property. The goal of market analysis is to minimize risks and maximize opportunity for developers and investors by providing analysis that is as timely and accurate as possible. Due to the characteristics of real estate, market analysts should account for the heterogeneity of the real estate market. One important issue in regional

and local development policy has become the identification of heterogeneity (differences) within the real estate markets' conditions and the determination of similarities between areas. National, regional and local economic conditions all affect real estate demand, but the most important factors are local; thus, the study of local economics and demographics should be the main focus of real estate market studies. Therefore, there is a need to identify and consider external factors, not only at the national level but also at the local level, e.g. municipalities or cities. Proper land administration policy, development policy and property management are based on knowledge and reliable information about the differences and similarities of given areas, especially at the local level.

The article is based on the following assertion: if consideration of local real estate markets is to become a routine component of policy decisions, both by the central government and by regional and sub-regional planning bodies, an easy to understand method that can be applied to any area and frequently updated must be developed. The authors assume factor analysis, as a statistical method among multivariate analysis methods, to be a useful tool for the determining the similarity of local real estate markets' conditions. In our research, we decided to identify homogeneous groups of local real estate markets based on non-pricing local economic factors. In our opinion the real estate market is not only the demand, supply and price, like in the neoclassical economics but it should be analyzed also from the institutional economics and behavioral economics point of view.

LOCAL REAL ESTATE MARKETS

At the local government level, there is a need to use reliable methods for the identification of similar real estate, which arises from many practical issues, especially from land management and land administration, e.g.:

- municipal development strategy planning or zoning plans;
- decision-making by local authorities in the field of housing policy;
- assessment of the condition of local real estate markets in the region;
- strategic management of territorial entities;
- forecasting the development of various areas;
- developing analyses and better decision making by analysts, developers and investors.

The issue of similarity between local real estate markets' conditions is an important area of research. Dittmann [2012] examined the phenomena of convergence and divergence on local markets, and similarities in terms of offer and transaction prices, with Heckman [2008] examining the possibility of using a non-linear causality in multivariable fractional polynomials (MFPs). White [2009] examined the behavior of house prices over a 23-year period in one city, looking at house prices in more and less expensive neighbourhoods and how they change over time, as well as investigating what the most important economic factors that affect house prices in the city are and how they affect different neighbourhoods. The research also examined whether these factors exert long-term or short-term impacts on prices, and the differences in these

price movements across neighbourhoods. McPeake [1998] examined the relationship between religion and choices made by buyers on local markets. The determinants of the development of local markets were examined by Foryś [2011] using Hellwing's parametric method. Źróbek and Grzesik [2013] analyzed the diversity of physical, legal and economic characteristics denoting risk which is specific to local real estate markets in contrast to other sectors of the economy. Scanlon and Whitehead [2011] conducted an analysis on pricing factors and macroeconomic influences in order to identify homogeneous groups of local markets.

MATERIAL AND METHODS

The analysis of local markets requires the simultaneous analysis of multiple variables. It appears that, in such case, it is worth examining factor analysis. This is a useful tool among multivariate methods for understanding the relationships between the variables of complex systems.

According to Cudeck [2000], factor analysis is a collection of methods for explaining the correlations between variables in terms of more fundamental entities called main factors. This means that each new main factor contains partial information from the basic variables. The goals of factor analysis are to determine the number of fundamental influences underlying a domain of variables, to quantify the extent to which each variable is associated with the factors, and to obtain information about their nature from observing which factors contribute to the performance of which variables. Factor analysis [Widaman 1993, Majors and Sedlacek 2001] is often used as a method for grouping variables according to a similar correlation pattern. In this capacity, factor analysis is simply a means for sorting objects. The objective of the analysis is to partition the variables into subsets that are hopefully distinct from those of other groups, and homogeneous within a group.

The key concept of factor analysis is that multiple observed variables have similar patterns of responses because of their association with an underlying latent variable, a factor that cannot be measured easily. One of the main reasons for using factor analysis rather than the more common multiple regression is the problem of multicollinearity amongst variables. The high levels of correlation between many of the variables that can be used to describe a local real estate market pose a problem in creating a stable multiple regression model. Factor analysis has been the subject of several studies [Thompson 2004, Zmarzłowski and Jałowiecki 2008, Lewandowska 2014, Sterev 2014] and more detailed procedures for the use of this method can be found there.

In general, we can say that factor analysis makes it possible to covert correlated variables to obtain new variables, called main factors, which are uncorrelated. Thus, the application of a factor analysis procedure enables the number of primary variables to be reduced to a few new synthetic variables. An important aspect of this procedure is that the new main factors do not lose their descriptive values. The new main factor should clarify the maximum amount of variance of primary variables.

RESULTS AND DISCUSSION

Data description

The research aimed at evaluating the usefulness of factor analysis for the determining the similarity of local real estate markets' conditions. The study was conducted in the northeastern part of Poland. It was decided to use the cities' administrative borders to distinguish individual submarkets (local real estate markets). The research involved variables originating from 13 cities. Data for the analysis were gathered from the Polish Central Statistical Office (GUS). The study was conducted for two periods, i.e. 2005 and 2012. The reason for selecting these periods is the assumption that research should be carried out during stable periods of real estate market development. In Poland, real estate prices increased slowly and steadily up to 2005, and then, from 2006 to 2007, underwent a rapid increase (by as much as 100% per year). After this time, the real estate market gradually stabilized during a gentle downward trend lasting from 2008 until 2011, and thus 2012 is considered to be the start of a new long-term stable period.

Real estate assets are heterogeneous, which implies that their characteristics vary. Researchers and practitioners have found that hundreds of factors might affect prices in various situations [Liu et al. 2006]. The choice of variables describing local real estate markets is relatively complex seeing as how the selection of factors that determine variations in these markets over time and in space continues to be the subject of debate in scientific publications. For example, Żelazowski [2011] examined economic indicators (GDP, construction costs, household incomes) and demographic factors (population, age structure, migration balance). Kasparowa and White [2001] studied the responsiveness of house prices to macroeconomic forces and found that real estate prices are driven by income growth and interest rates. Ze-bin and Si-wen [2013], in their analysis, used per capita GDP, the average wage of workers, proportion of tertiary industry added value in GDP, urbanization rate, amount of contracted foreign capital, urban domestic consumption of electricity, passenger traffic, per capita road area of the city, number of colleges, number of hospital beds, green coverage of built-up areas, student population, and urban sewage treatment rate. Wit and Dijk [2003] analyzed rents, capital appraisals, total returns, gross domestic product, inflation, unemployment and vacancy rate. Renigier-Biłozor et al. [2014], for rating the methodology of real estate markets in Poland, uses the percent of land covered by zoning plans, unemployment rate, total number of issued construction permits, number of developers on the local market, number of deaths, existing residential areas per resident, population density, number of marriages and population growth. In another study of the Polish housing market, Foryś [2011] examined economic (GDP, performance of construction and assembly markets, unemployment, number of new apartments, availability of loans and state spending on housing) and social (demographic factors, marriage rates, divorce rates, natural population increase and migration balance) drivers of growth.

In Table 1, the following set of diagnostic features was specified for purposes of our analyses.

Table 1. Description of variables

Symbol	Description
TA	area of the town (km^2)
TP	population of the town (number of inhabitants)
ND	number of new dwellings (number)
TI	budget revenue per inhabitant (PLN)
U	employment ratio – relation of the number of those employed to the total number of people in the economically productive age group (%)
TL	infrastructure indicator (total length of water supply and sewage lines per km^2)

Source: Authors' own study.

The data for the research were gathered from two periods, i.e. 2005 and 2012. Determination of similarities between the cities was conducted independently for these periods. Such implementation of the research procedure gives us the possibility to compare the evolution of the thirteen selected local markets over time. The percentage differences in the selected variables have been shown in Figure 2.

Most of the variables increased significantly from 2005 to 2012, especially (ND) – new dwellings in the town/city – in the case of which the increase was close to 180% in Morąg and close to 100% in Kętrzyn, though much smaller decreases were also observed. The observed changes in the factors in the years 2005 and 2012 could change the classification of local real estate markets (cities) in terms of similarity groups.

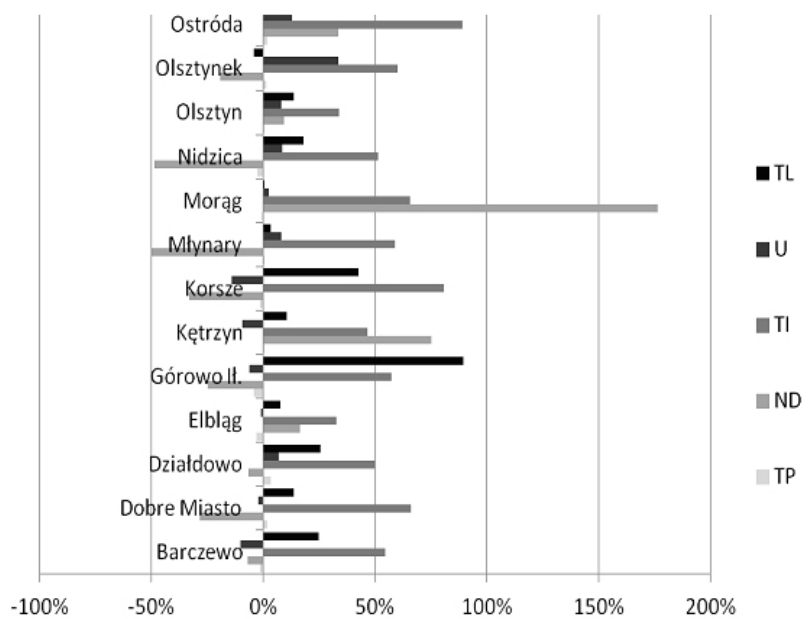

Fig. 1. The percentage differences in 2005–2012 in selected variables, i.e. TL, U, TI, ND, TP

Source: Authors' own study based on data from the Central Statistical Office of Poland.

Factor analyses – practical approach

The primary variables obtained from the Polish Central Statistical Office have been transformed into a rank. The next step was to determine the correlation matrix between the primary variables, as a basis for creating new uncorrelated main factors (Table 2). Further investigation, such as the use of algorithms for identifying hidden factors, depends on the preliminary analysis of this matrix. If the correlation coefficients are low (average correlation coefficients assume values of less than 0.3) or none of the variables are highly correlated with any of the others, a further procedure based on the factor analysis model may lead to unreliable results.

Table 2. Primary variables correlation matrix

2005	SD	TA	TP	ND	TI	U	TL
TA	3.883	1.000	0.956	0.972	–0.055	0.156	–0.052
TP	3.894	0.956	1.000	0.984	–0.071	0.091	–0.016
ND	3.894	0.972	0.984	1.000	–0.027	0.099	–0.055
TI	3.894	–0.055	–0.071	–0.027	1.000	–0.127	–0.747
U	3.884	0.156	0.091	0.099	–0.127	1.000	0.380
TL	3.894	–0.052	–0.016	–0.055	–0.747	0.380	1.000
2012	SD	TA	TP	ND	TI	U	TL
TA	3.884	1.000	0.950	0.967	–0.174	0.121	–0.273
TP	3.894	0.950	1.000	0.978	–0.159	0.000	–0.170
ND	3.894	0.967	0.978	1.000	–0.132	0.044	–0.176
TI	3.894	–0.174	–0.159	–0.132	1.000	–0.291	–0.533
U	3.894	0.121	0.000	0.044	–0.291	1.000	0.082
TL	3.894	–0.273	–0.170	–0.176	–0.533	0.082	1.000

Source: Authors' own study.

The obtained values of correlation coefficients indicate that their average values oscillate within the permissible size of 0.3, and thus the second of the conditions for carrying out further work is satisfied. For example, the variable TA (town area) correlates highly with the variables TP (town population) and ND (new dwellings), i.e. the value is greater than 0.9.

To assess the appropriateness of using factor analysis on the empirical data and to establish how many factors are important, the most commonly used method is the Kaiser criterion. This criterion retains only those factors whose proper values are greater than 1. This means that if the factor does not differentiate at least as much as one original variable, it is rejected. To establish how many factors are significant, graphs of proper values have been presented in Figure 2.

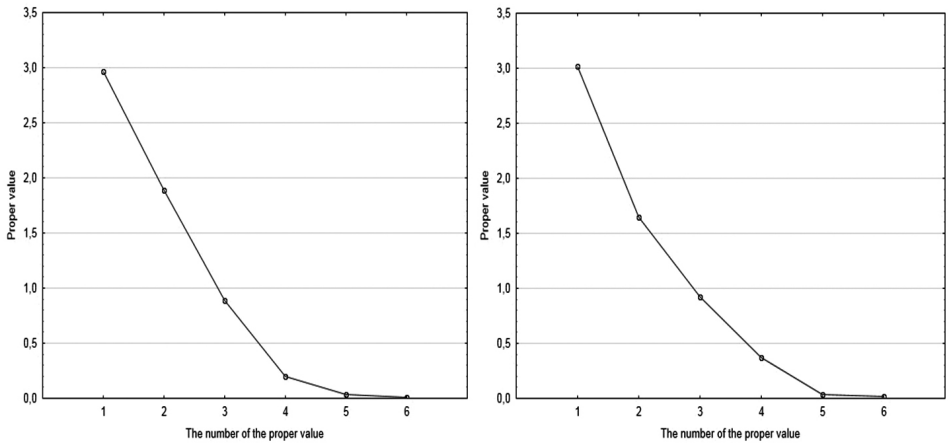

Fig. 2. Graphs of proper value for 2005 (left) and 2012 (right)

Source: Own study based on data from the Central Statistical Office of Poland.

In both cases, the graphs of proper values indicate that only two factors are significant (Kaiser Criterion). In such cases, there is a possibility to build a two-dimensional space in which the location of each local real estate market can be described using the two new main factors as coordinates.

The next stage was to determine the so-called own value of each of the new main factors. The results have been presented in Table 3. From the six variables describing local real estate markets in 2005, the two new main factors covered approximately 70% of the original information. The first factor covered nearly 50%, while the second factor – nearly 32%. For data from 2012, two new main factors covered approximately 77% of the original information; The first factor covered nearly 50%, while the second factor covered nearly 27%.

The results of calculating factor loadings have been presented in Table 4.

The results are similar for data from 2005 and 2012. Factor 1 is most strongly correlated with: TA – town area, TP – town population, ND – new dwellings. Factor 2 contains further primary variables, i.e. TI – town income per capita, U – unemployment rate, and TL – total length of infrastructure.

Table 3. Identification of new main factors

2005	Own value	% of variance	Cumulated value	Cumulated value (%)
1	2.967	49.449	2.967	49.449
2	1.889	31.478	4.856	80.927
2012	Own value	% of variance	Cumulated value	Cumulated value (%)
1	3.016	50.265	3.016	50.265
2	1.644	27.408	4.660	77.673

Source: Authors' own study.

Table 4. Factorial loads for 2005 and 2012

Symbol	2005		2012	
	Factor 1	Factor 2	Factor 1	Factor 2
TA	0.9860	0.0486	0.9897	0.0222
TP	0.9855	0.0563	0.9798	0.0271
ND	0.9939	0.0192	0.9856	0.0232
TI	–0.0040	–0.8610	–0.1524	–0.8825
U	0.1289	0.5188	0.0835	0.4998
TL	–0.0887	0.9399	–0.2723	0.7842
Share (%)	0.4926	0.316657	0.5025	0.2742

Source: Authors' own study.

After this step, the so-called factor loadings for each of the analyzed 13 local real estate markets should be calculated. After the calculation of these factor loadings, there is a possibility to build a two-dimensional space in which the location of each local real estate market can be described using the new main factors as coordinates. The graphical distribution of calculated factor loadings and their affiliation to the specific integrated factor has been presented in Figure 3 for 2005, and Figure 4 for 2012.

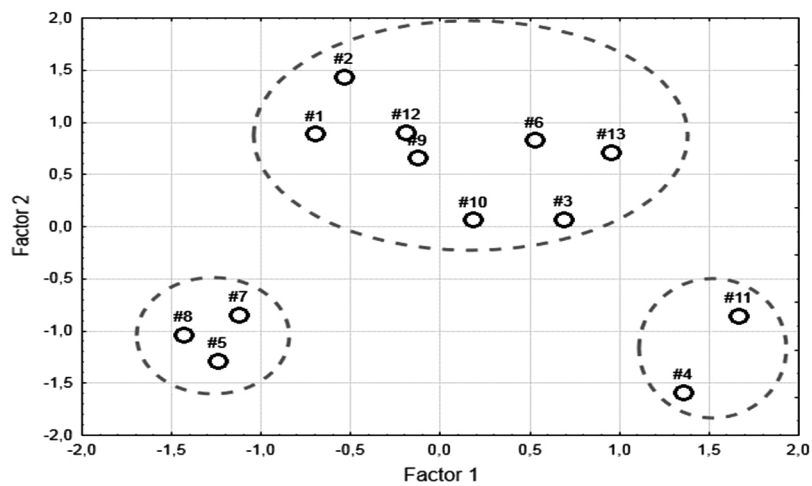

Fig. 3. Configurations of local real estate markets (numbers 1, 2 etc. – description in Table 5) in reference to the main factors under examination in two-dimensional space in 2005. Circle indicates a group of similar local real estate markets

Source: Authors' own study.

The similarity of local real estate markets' conditions (Figs 3 and 4) can be described by assessing the proximity of selected points representing the local real estate markets under examination, described by coordinates which, at the same time, constitute the value of the main factors. The classifications of local markets into groups have been presented in Table 5 for 2005, and Table 6 for 2012.

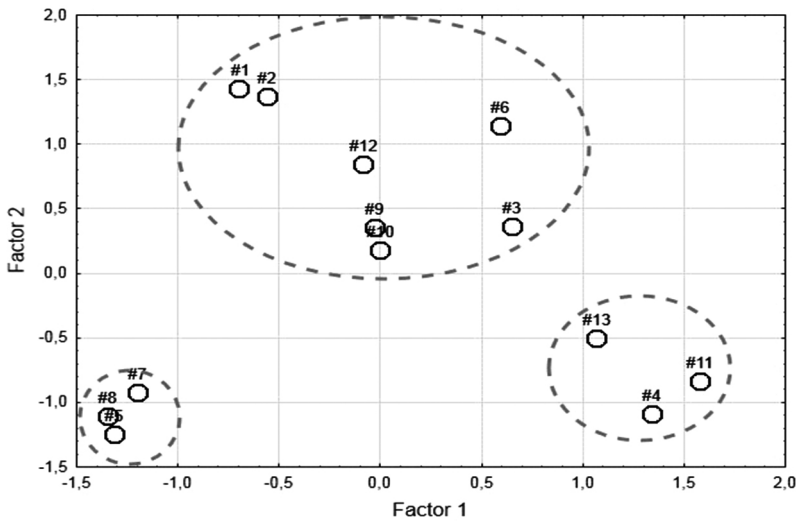

Fig. 4. Configurations of local real estate markets (numbers 1, 2 etc. – description in Table 5) related to the main factors under examination in two-dimensional space in 2012. Circle indicates a group of similar local real estate markets

Source: Authors' own study.

Table 5. The classification of local markets in 2005

Cluster I	Cluster II	Cluster III
4_Elbląg 11_Olsztyn	1_Barczewo 2_Dobre Miasto 3_Działdowo 6_Kętrzyn 9_Morąg 10_Nidzica 12_Olsztynek 13_Ostróda	5_Górowo Ił. 7_Korsze 8_Młynary

Source: Authors' own study.

Table 6. The classification of local markets in 2012

Cluster I	Cluster II	Cluster III
4_Elbląg 11_Olsztyn 13_Ostróda	1_Barczewo 2_Dobre Miasto 3_Działdowo 6_Kętrzyn 9_Morąg 10_Nidzica 12_Olsztynek	5_Górowo Ił. 7_Korsze 8_Młynary

Source: Authors' own study.

After applying factor analysis, all 13 cities (local real estate markets) were divided into three clusters of similarity. The results in Tables 5 and 6 are very similar. Between 2005 and 2013 only one local market – Ostróda (13), had the greatest developmental progress taking into account the six parameters, and advanced from Cluster II to Cluster I, which comprises the biggest cities in Warmia-Masuria Province, i.e. Olsztyn (11 – the capital of the province) and Elbląg (4).

CONCLUSION

The paper examines the usefulness of factor analysis for the determining the similarity of local real estate markets' conditions. Using factor analysis, it is possible to reduce the number of variables with little loss of information contained within them. In the presented research, we made use of information from six variables describing local real estate markets to create two new main factors, which together account for 80% of the variability of the primary variables. The conducted research making use of factor analysis indicates that it is possible to find similarities between local real estate markets (cities) and carry out their classification. Almost the same results obtained in the years 2005 and 2012 lead to the conclusion that the real estate market in Poland, after a period of instable evolution (2006–2011) returns to a stable path of evolution.

Although the detailed results refer to local real estate markets in Poland, the applied methodology can be used for other markets. The quality of the results depends directly on the amount and type of data selected for analysis.

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ANALIZA CZYNNIKOWA W OKREŚLANIU PODOBIEŃSTWA UWARUNKOWAŃ LOKALNYCH RYNKÓW NIERUCHOMOŚCI

Streszczenie. Zainteresowanie badaniami w zakresie poszukiwania podobieństwa rynków nieruchomości wynika z wielu praktycznych problemów, zwłaszcza w kontekście gospodarki nieruchomościami. Autorzy uważają, że użytecznym narzędziem do określania podobieństwa uwarunkowań lokalnych rynków nieruchomości jest analiza czynnikowa. Z przyjętych sześciu zmiennych opisujących lokalne rynki nieruchomości dokonano ich transformacji do dwóch nowych niezależnych czynniki głównych, które łącznie zawierają 80% zmienności zmiennych pierwotnych. Stosując analizę czynnikową, zbudowano dwuwymiarową przestrzeń, w której położenie poszczególnych rynków może być opisane za pomocą nowych czynników głównych traktowanych jako współrzędne. Badania empiryczne zostały przeprowadzone na rynkach wybranych miast Polski położonych na terenie województwa warmińsko-mazurskiego. Zaproponowana metodyka może być stosowna także w odniesieniu do rynków dowolnych obszarowo.

Słowa kluczowe: podobieństwo, analiza czynnikowa, rynek nieruchomości

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MARKET FAILURE AND THE PROVISION OF PUBLIC GOODS IN AGRICULTURE

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Abstract. This article presents theoretical concepts and mechanisms of market failure and the response of the active state policy in the area of provision of public goods, on the example of instruments of the Common Agricultural Policy (CAP). Financing of CAP from the EU funds should be supported by expectations of the European society and the awareness of the importance of such activities. Therefore, the author made references to Eurobarometer surveys, on the basis of which she was able to show the opinion of EU citizens about the examined CAP instruments. In the article, the author argues that the provision of public goods in agriculture is only possible through the support of activities of farmers by public institutions, which can effectively support them in this regard, using available financial instruments. For many years, the financial support within the framework of the CAP has resulted in the provision of goods, both environmental and economic, as well as socio-cultural.

Key words: state failure, public goods, protectionism in agriculture, the CAP, the EU

INTRODUCTION

In recent years, the role of the European Union policy in delivering public goods has become increasingly important, and at the same time, as an issue, has been analysed from the point of view of the budgetary capacity of the EU. In justifying the need for the provision of public goods, you should refer to the economic theory. Already in the classical economics, A. Smith pointed out that the state should provide citizens with certain public goods even when implementing the concept of the night-watchman state. Such goods provided to citizens by the state are primarily safety, respect for social justice and maintenance of certain public institution and certain public works, which are not funded

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by private companies [Smith 1954]. Therefore, in each country, undergoing a particular socio-economic development, economists raise the question about the level of state regulation and intervention. The justification of activities conducted must reflect not only the scope of social needs and expectations but also the amount of funds generated from the budget for public purposes. Issues related to the functioning of, and the decision-making process in, the country are analysed in detail also in the theory of public choice, classified as new institutional economics [Wilkin 2005]. In the theory of public choice, an issue which is of particular interest to representatives of the Chicago School is the economic theory of regulation, in which two main concepts may be distinguished, namely public interest and private interest [Nagaj 2012]. The concept of public interest is based on the assumption that the market is characterised by unreliability, and therefore, government intervention is undertaken. It is assumed that the market is inefficient and the state, through its actions, is to reduce such inefficiency and its impact on the economy. In addition, the concept of public interest justifies government supervision over production of widely recognised national public goods [Kemerschen et al. 1991, Marciniak 2005]. The second concept argues that the state does not act in the public interest but in the interests of certain business groups, corporations exerting their influence over the government, and thus, affecting public decisions [Gunning 2001].

The theoretical purpose of these considerations is to present the foundations of the concept of market failure, justifying state intervention. In cognitive terms, the aim is to relate such theoretical foundations to practical examples of delivery of public goods in agriculture, within the framework of the CAP of the European Union. Especially in the EU budget for the years 2014–2020, the ability of farmers to receive financial support was combined with their compliance with specific standards and regulations, leading, among others, to certain positive external effects of conducted activities. A review of available literature allowed the author to assume that the existence of public goods in agriculture and the inability of market entities to fully deliver such goods to the public, has resulted in the need to implement an active state policy in this area. The article was prepared on the basis of a number of source materials, monographs and scientific articles in the field of economics, public goods and the Common Agricultural Policy. The article also presents the results of Eurobarometer surveys which, on the one hand, demonstrate knowledge of EU citizens of the actions taken under the Common Agricultural Policy, and on the other hand, the awareness of the connection between selected CAP instruments with the necessity of providing public goods by farmers. The surveys were conducted in October 2015, based on the direct structured interview method, i.e. a total of approximately 28 thousand interviews, including more than 1 thousand questionnaires distributed in Poland.

MARKET VERSUS STATE FAILURE

The basis of economic theories arguing the legitimacy of state intervention is the belief of the market failure or defects, causing imperfections in the operation of the market. At the beginning of our considerations, it should be stated that neither the state nor the market operate perfectly. The main causes of state failure are: limited access to information, limited state control over the operation of private markets and bureaucracy, as well

as limitations of a political nature [Okimoto 1990, Stiglitz 2004]. Limited information available to the government about, e.g. effects of public programmes, may result in the difficulty to predict the financial impact of implemented solutions. Limited control over the activities of private markets demonstrates that in allowing private enterprises to implement public tasks, the state is not always convinced of the correctness of their execution – for instance, the irregularities in the implementation buying process carried out by private companies in Poland before its accession to the EU. On the other hand, limited control over bureaucracy reflects problems in the implementation of laws by various government agencies. In the implementation of specific by-laws, these agencies could devote too much time to their preparation. Moreover, their decisions could differ from original assumptions, especially when the decision-making path is excessively long, i.e. initially established in EU legislation and subsequently transposed into the regulations of individual Member States. Political restrictions, i.e. possible activities in favour of certain interest groups, are also crucial in this regard.

Realising failure of the state (and the EU – in the case of the CAP), you must also remember about market failure. The market mechanism is effective when certain assumptions are met. According to the theorem of welfare economics, economy is effective, as defined by Pareto, only when certain conditions have been met. Efficiency, as understood by Pareto, is the type of resource allocation where nobody's situation can be improved without worsening at the same time the situation of someone else. Such resource allocation, as defined by Pareto, is called efficient, or in the sense of Pareto's theory – optimal. The state has its limitations, thus it should only intervene where market failure is greatest and where intervention can bring visible improvements. However, you can enumerate several reasons for market inefficiency, as understood by Pareto. They are referred to as types of market failure, and in these situations, it is believed that state intervention is justified [Stiglitz 2004, Podlasiak 2009]. You may quote numerous reasons for market failure, i.e. lack of perfect competition, failure resulting from the existence of public goods and externalities, incompleteness of markets, incompleteness of information in the economy, or instability of the economy and lack of an automatic mechanism to restore balance [Wojtyna 1990, Samuelson and Nordhaus 1996, Milewski 2004, Stiglitz 2004, Skawińska et al. 2008, Fijor 2012].

Market failures result from the occurrence of the so-called imperfect competition, which is a consequence of the monopolistic position of companies. Monopolistic practices lead to a reduction in social welfare, higher prices of products and production which is lower than in conditions of free competition. The state can reduce the effects of market failures by preventing monopolistic practices or strengthening the system of information flow [Wojtyna 1990, Milewski 2002, Stiglitz 2004]. Pigou [1920] states that in the case of monopolistic practices, the state may apply financial penalties, abolish import duties on competitive products, or cause the state to be involved in the provision of similar services. However, according to Pigou [1920], you need to remember that such policy should be neither too restrictive nor too lenient. Another cause of market failure is the existence of public goods. These are specific goods which are not supplied by the market or supplied in insufficient amounts. The use (or consumption) of goods by one person does not mean that others are not able to use them at the same time (non-rivalry in consumption) [Acocella 2002, Stiglitz 2004, Altvater 2007, Podlasiak 2009, Samuelson and Nordhaus 2012].

Besides, there is no practical possibility to exclude a person from consumption of a public good, or such action would entail excessive costs [Wojtyna 1990, Stiglitz 2004, Podlasiak 2009, Olson 2012]. Public goods are available to everyone, including those who have not paid for it, i.e. people who knowingly make use of such goods and avoid any costs arising therefrom. In the absence of state interference, involving manufacture and supply of such goods, a situation could occur, where – despite strong demand for a given good – it would not be manufactured [Wojtyna 1990, Stiglitz 2004].

Pure public goods and public services are not the only goods and services in respect of which the market fails to deliver the proper amount. There are also other goods which are not provided by the market, even though the cost of offering them is lower than the selling price. This situation is referred to as an incomplete market, as opposed to a complete market which is able to deliver all goods and services provided that the cost of their manufacture is lower than the selling price. Quite frequently, markets fail in the area of insurance in agriculture, by failing to offer specific types of insurance due to problems related to risk assessment. Especially in the case of repeated natural disasters and major losses in production, including agricultural, you may wish to ask the question whether or not the state should participate in this system.

Another important issue is the existence of the so-called externalities. Externalities occur where decisions taken by an entity, in terms of production or consumption, directly affect (not through market prices) the production or consumption of other economic entities [Podlasiak 2009]. Externalities apply to phenomena, behaviours and business processes, which, due to their specificity, go beyond the operation of the market. Examples of externalities are: environmental pollution, noise and traffic congestion. Externalities can be both negative (in the form of costs to be incurred by others) and positive. Since companies do not bear the full cost of negative effects of externalities caused by them, the scale of their operations may be large. On the other hand, if an individual does not accept all the benefits associated with the activity which is accompanied by positive externalities, the scale of their operations is too small [Stiglitz 2004]. With regard to the so-called negative externalities caused by economic operators, the state applies such instruments as taxes or quantitative restrictions, and in relation to the positive effects – subsidies. The state can induce economic operators to cover the costs linked to the reduction of the negative side effects of their operations [Milewski 2002, Skawińska et al. 2008, Samuelson and Nordhaus 2012]. Goods which are an outcome of agricultural activity are a specific example of externalities. In agriculture, the currently applicable CAP makes it possible to support farmers, thereby encouraging them to conduct activities which are beneficial to the environment and improving food security. Accordingly, a question should be asked whether these measures would be implemented to the same extent if it were not for the financial support of manufacturers. Undoubtedly, the financial support does not only raise awareness of the beneficiaries but it is also an element encouraging action in this regard. The receipt of funds linked to the system of direct payments or the Rural Development Programme is a means of help for both large and small farms.

The existence of both socially beneficial and unfavourable goods is another reason for market failure. Not all goods consumed by the individual are beneficial to him/her from a social point of view. In a particular situation, the individual may decide to consume products which are harmful to him/her, and this is why the state may apply a ban on vo-

luntary cultivation and sale of plants harmful to consumers (hemp seed) [Wojtyna 1990, Milewski 2002, Skawińska et al. 2008]. With access to and opportunities for the transfer of information, the state is able to create incentives or disincentives for consumption of such goods [Milewski 2002, Stiglitz 2004].

As a cause of market failure, Wojtyna [1990] also indicates the requirement for a more equitable distribution of national income. Unrestricted market forces can promote optimal allocation of production factors, however, it can also lead to a polarisation of society's income. Therefore, the distribution of national income depends not only on the market operation but also, for example, on the legal framework defining the rules of inheritance of wealth. The existence of people deprived of, and at the same time, requiring care, calls for involvement of the state [Wojtyna 1990]. Furthermore, the unstable economy and the lack of an automatic mechanism for restoring equilibrium is a problem leading to negative consequences. The operation of the market mechanism leads to the creation of insufficient demand in relation to supply, which also results in the under-utilisation of production capacity. Interference between supply and demand may continue over relatively long periods of time, leading to unemployment and under-utilisation of production capacity [Stiglitz 2004]. An active state policy is aimed at stabilisation activities, which can also be applied to the Common Agricultural Policy within the EU. This policy, from the very beginning of its operation, has been aimed at ensuring an adequate level of supply of agricultural products, whereas the subsequent introduction of intervention with regard to basic agricultural products was also aimed at enabling producers to sell their products at a fixed price.

There is also a need for the functioning of a legal system which defines ownership and the principles of concluding commercial agreements (contracts) between economic entities. The legal framework is necessary due to the fact that the majority of transactions are not based on the direct delivery of products or services but on their provision in the future. In a market economy, the state should create legal standards and institutions to protect proprietary rights, and regulate the system of private entrepreneurship [Milewski 2002]. In addition, many areas of economic life rely on a uniform legal system, not only in the context of a single country but in the context of many countries, e.g. the European Union. A perfect example of this phenomenon is the Common Agricultural Policy, operating in different Member States, on the basis of uniform guidelines and rules.

PUBLIC GOODS IN AGRICULTURE, PROVIDED WITHIN THE FRAMEWORK OF THE EU CAP

Since the mid-1980s, environmental protection, as defined by the Common Agricultural Policy, has gained special significance. The adoption of the Single European Act confirmed the need to support the process of harmonisation of the agricultural sector in the EU and the need to take measures to protect the environment [Jurcewicz 2010]. The purpose of preserving, protecting and improving the environment is to contribute to the protection of human health, while ensuring the rational use of natural resources. Community action should be taken only when activities related to the environment, in accordance with the principle of subsidiarity, could be better implemented at the Community

level rather than at the national level [*Single European Act* 1986]. Subsequent changes to the CAP, including reforms by Mc Sharry and Agenda 2000, promoted the multifunctional development of agriculture, extensive farming practices and exclusion of arable land from cultivation. It was recognised that the constant expansion of agricultural production would contribute to the creation of food surpluses and adverse environmental effects. The reduction in the potential of natural resources and the progressive degradation of environmental values led to increasing concern about the possibility to maintain natural resources for future generations. Therefore, a lot of attention was paid to the concept of sustainable development, which applies to economic, environmental and social aspects [Majewski 2008, Czyżewski and Brelik 2013]. By reference to the European nature of agriculture, the importance of the rural development policy and environmental policy was emphasised, especially in the context of improving the safety and quality of agricultural produce. This direction of changes, continued in the subsequent EU budgetary perspectives, gained particular importance in the current financial perspective – 2014–2020 [Biernat-Jarka 2016]. Currently, particular attention in the functioning of the Common Agricultural Policy is being paid to the possibility of linking funding opportunities for individual instruments, e.g. direct payments or measures under the rural development policy, to the provision of public goods. What public goods are delivered as a result of the implementation of the CAP? In reference to this question, first of all, it must be emphasised that such goods result from activities carried out by private operators (farmers), as a result of financing specific programs.

Cooper et al. [2009], in the report on public goods provided by agriculture, divided such goods by the level of their publicity, into low, medium and high level goods. The low level of publicity is demonstrated by pure market goods, supplied by producers at a certain price, e.g. agricultural products. The second group are club goods, e.g. private parks and the so-called shared (common) resources, such as agricultural landscape. The last group, i.e. pure public goods, include e.g. climate and biodiversity (Table).

Wilkin, in analysing the importance of public goods in agriculture, highlights two types of such goods: substantive (socially desirable) and public goods. The difference between substantive, i.e. socially desirable, goods and public goods is the fact that the

Table. Distribution of goods depending on the level of publicity

Degree of publicness			
low	medium		high
private goods	club goods	impure public good	pure public goods
competitive in terms of consumption	non-competitive in terms of consumption by a small group of users	non-competitive in terms of consumption with a high degree of risk of exhaustion in a situation of excessive number of consumers	non-competitive in terms of consumption, but there is a risk of exhaustion in a situation of excessive number of consumers
excluding non-owners from consumption	restricted group of users; others are excluded from consumption	others may be excluded from consumption only by incurring high costs	inability to exclude others from consumption
e.g. agricultural produce	e.g. private parks	e.g. agricultural landscape	e.g. climate, biodiversity

Source: Cooper et al. [2009].

first type can be supplied by private operators, and as a rule, they are priced, and access to these goods is not common due to their specific price or other conditions limiting their access. Substantial goods financed from private sources may be supported with public funds due to their positive externalities. According to Owsiak [2002], social goods are those which – due to their physical aspects – could take the form of private goods, but thanks to the social policy of public authorities, they are available to every citizen. This is also the case with goods resulting from certain types of agricultural activity. It should be noticed that without additional incentives and appropriate programmes, provision of public goods in agriculture would be limited. Therefore, under the Common Agricultural Policy, direct payments and the possibility to benefit from the rural development policy, has been linked to the application of specific actions, which are favourable from the point of view of the environment. By analysing the categories of public goods provided by agriculture, either directly or in the form of externalities of farming, we can distinguish environmental, economic and socio-cultural goods. Environmental goods delivered as part of the EU agricultural policy include: biodiversity, agricultural landscape, soil conservation and proper water relations. In terms of economic goods, the following examples could be quoted: food security, food safety and energy security, while socio-cultural goods are, e.g. economic and social viability of the country (rural areas), enrichment of national culture and formation of local, regional and cultural identity [Cooper et al. 2009, Wilkin 2010]. In Poland, as part of the system of direct payments, the link between such payments and the compliance of farmers with the rules arising from the implemented policy, is emphasised. First of all, we should mention here payments for planting greenery, based on fulfilment of the requirements for crop diversification, maintenance of permanent agricultural land, and also appropriation of part of the farm area to environmental purposes [*System*... 2015]. Another important principle underlying direct payment system is compliance by farmers with Good Farming Practices (agriculture), which includes provisions for proper farming. In this way, the EU aims to maintain biological biodiversity by protecting natural habitats, animal and plant species in Natura 2000 areas. Landscaping is done through the protection of natural monuments, ponds with an area of not less than 100 m^2 and a ban on the destruction of trenches up to 2 m wide. An important aspect in the field of environmental protection is the protection of waters from the consequences of improper use of fertilisers containing nitrogen, as well as protection of groundwater against pollution by dangerous substances. Environmental activities also apply to the maintenance of good condition of the soil, which is possible, e.g. with cultivation on arable land located on slopes with a tilt in excess of 20 degrees, the prohibition of burning farmland, or maintaining a minimum cover for the protection of the soil on the surface of at least 30% of arable land, located in areas threatened by erosion. In addition to direct payments, another important element in the provision of public goods is a system of measures proposed to farmers under the Rural Development Programme [*Rural Development Programme...* 2014]. In delivering environmental public goods, the following instruments are of key importance: restoration, protection and enrichment of biodiversity in selected areas, improving water management and prevention of soil erosion. Extensive land use in areas with less favourable farming conditions, or the construction of ecological corridors and enclaves, contributes to the preservation of the landscape and promotes biodiversity in rural areas.

Instruments used under the RDP are also designed to provide economic public goods, mainly by maintaining food security. This is possible thanks to the support of modernisation and structural transformations of agriculture. Improved competitiveness of agricultural producers may be achieved through better relationships and integration of the agricultural sector with the agri-food chain, as well as promotion of agricultural products. Another important activity is the financial assistance in the implementation of innovative solutions in agricultural enterprises. Innovative solutions could contribute to the improved adaptation of agricultural activities to environmental needs.

Extensive land use in areas with less favoured or the construction of corridors and ecological enclaves contribute to the preservation of the landscape and promotes biodiversity in rural areas. Instruments used in the RDP also have to provide economic public goods, mainly by maintaining food security. This is possible thanks to the support of modernization and structural transformation of agriculture. Improving the competitiveness of the agricultural producers can be achieved through better relationships and integration of the agricultural sector of the agri-food chain as well as the promotion of agricultural products. An important activity is the financial assistance in the implementation of innovative solutions in agriculture. Innovative solutions can contribute to adapting agricultural activities to the needs of the environment. Another noteworthy issue is the manner in which the Common Agricultural Policy is perceived by EU residents. Due to the fact that common policies are financed with public funds, it is important to gain public support in the EU for the instruments applied by CAP. Surveys carried out by Eurobarometer[1] in October 2015 showed that over 90% of respondents felt that agriculture and rural areas are an important challenge for the future of the EU population. According to respondents, farmers are mainly responsible for providing consumers with high quality products (42%), ensuring the welfare of animals (35%) and protecting the environment (30%). Almost 90% of respondents support the idea of combining financial assistance to farmers and their compliance with practices which are beneficial for the climate and the environment, as well as diversification of crops and maintenance of permanent grassland. About 90% of respondents stated that there should be a relationship between the financial assistance available to farmers and their compliance with animal welfare, environmental protection and food safety standards. However, as shown by the Eurobarometer survey, when respondents were asked the question about the main objectives of the EU in relation to agriculture and rural areas, the most popular responses were: ensuring food quality and safety of agricultural products (56%), ensuring reasonable food prices for consumers (51%), and ensuring an adequate standard of living for farmers (49%). In a sense, these surveys indicated a return to the traditional objectives of the CAP, i.e. the need to support farmers' incomes and the need to provide consumers with an adequate level of prices of consumer products. Exactly 62% of respondents (including, interestingly, 75% of respondents in Poland) agreed with the statement that all Europeans benefit from the CAP. Based on the surveys, it can be stated that EU residents are not indifferent to the issues of the Common Agricultural Policy, and that there is high awareness of action

[1] As part of Eurobarometer, in October 2015, 27, 822 direct structured surveys were conducted in 28 EU Member States.

undertaken in this area. The surveys shows that if food security, measures to protect the environment and animal welfare is what we expect, we are well aware of the need to fund programmes from the EU budget.

CONCLUSIONS

Already in the classical economics, A. Smith emphasised the importance of state institutions in the provision of public goods. He believed that there were certain goods, defined as public goods, which should be secured by the state. Despite the passage of centuries, the issue of public goods and the need for their funding from the state (or EU) budget continues to be valid. A specific type of such goods are those delivered by agriculture. In analysing the issue, on the basis of the assumption of state and market failure, the author demonstrated that the financing of public goods in agriculture was necessary. Private agricultural operators are involved in operations based on economic effects and not social expectations. It should be noted here that the manufacture and supply of public goods by private entities frequently entails additional costs which are not compensated by market transactions. Therefore, ensuring additional funding for such goods, separate from the market mechanism, is a desirable or even necessary measure in the long-term perspective. This is exactly the case with the Common Agricultural Policy, where the EU, recognising the importance of environmental or socio-cultural action, supports activities undertaken by private entities by way of direct payments and the Rural Development Plan.

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ZAWODNOŚĆ RYNKU A DOSTARCZANIE DÓBR PUBLICZNYCH W ROLNICTWIE

Streszczenie. W artykule przedstawiono teoretyczne koncepcje i mechanizmy zawodności rynku i odpowiedź aktywnej polityki państwa w obszarze dostarczania dóbr publicznych na przykładzie instrumentów wspólnej polityki rolnej (WPR) Unii Europejskiej. Finansowanie WPR ze środków unijnych powinno być poparte oczekiwaniami społeczeństwa europejskiego i świadomością o ważności tych działań. Autorka odniosła się więc do badań Eurobaromentru, na podstawie których pokazała opinię obywateli UE na temat badanych instrumentów WPR. W artykule postawiono tezę, iż dostarczanie dóbr publicznych w rolnictwie możliwe jest jedynie poprzez wsparcie działań rolników ze strony instytucji publicznych, które poprzez instrumenty finansowe mogą skutecznie wspierać ich w tym zakresie. Prowadzone w ramach WPR wsparcie finansowe, już od wielu lat, przynosi efekty w postaci dostarczania dóbr o charakterze środowiskowym, ekonomicznym i społeczno-kulturowym.

Słowa kluczowe: zawodność państwa, dobra publiczne, protekcjonizm w rolnictwie, WPR, UE

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LAND AND LABOUR PRODUCTIVITY IN POLISH AGRICULTURE AGAINST HIGHLY-DEVELOPED COUNTRIES OF THE EUROPEAN UNION

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Abstract. The paper is a comparative analysis of land and labour productivity in Poland and those member states of the European Union (EU) most resembling Polish conditions in terms of agricultural production structure – Germany, France and Denmark. The diversity of productivity was presented in division into farm groups of various area of utilised agricultural area (UAA) and economic power. The research, carried out on the basis of data of 2013, enabled to identify the fact that small and medium agricultural holdings in Poland are more efficient than similar size farms in comparable member states of EU-15 which, however, does not influence a higher productivity of the whole sector since it depends on the results of the economically largest farms. Dividing farms into groups according to the UAA leads to conclusions that the labour factor is most efficiently used in small and big agricultural holdings, and the land factor – in medium farms.

Key words: production structures, agriculture, comparative analysis

INTRODUCTION

The accession of Poland into the EU structure is connected with the number of opportunities which are available to agricultural producers and they mostly result from the participation in Single European Market (SEM) and execution of Common Agricultural Policy (CAP). Hence, the integration of national agricultural markets with the markets of "old" member states stimulates the process of price and demand rise and it also means the inclusion of national farming into the external tariff protection system [Tomczak and Wilkin 2003]. Yet to retain competitiveness within the framework of SEM, the agriculture of "new" member states requires adjustable processes which consist in increasing the use productivity of possessed resources. In a microeconomic approach, stating the existence

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of productivity or its lack, requires juxtaposing the input and output of a given economic system [Kulawik 2007]. However, in a macroeconomic approach this productivity is determined by the production structure [Pajestka 1981]. Therefore the necessary condition of productivity improvement of production factors use in agriculture is the influence on production structures. However, the evolution of those structures progresses slowly, especially in case of farming where a significant role is played by immobile, highly-specific land factor whose lower efficiency negatively influences the productivity of other production factors and decreases competitiveness of the whole sector [Kusz 2012]. Moreover, CAP executed by the EU is nowadays based on a paradigm of a sustainable growth and it does not force the growth of production efficiency to such extent as it was in the past. The improvement of farming productivity is connected with the sustainable management of natural resources which means that an economic growth which is too dynamic can be regarded as a potential threat to maintain and increase farming productivity in the future [Floriańczyk and Rembisz 2012]. Meanwhile, new member states deviate from the EU-15 to a significant degree within this field which can impinge on their competitiveness. This thread is well presented by Czyżewski [2012] who acknowledges that in the context of Poland the farming capital accumulation is more rational from the point of view of economic and social order (on condition that it does not disrupt the environmental order in the EU) than investments in ecologisation in the face of obtained comparative advantages. The key fact to understand that problem is the answer to the question to what extent Polish agriculture lags behind other EU member states in terms of production factors efficiency and what is the connection with varied structural conditions of farming production. The aim of the paper is the interpretation of diverse labour and land productivity in the context of the EU-15 member states similar to Poland in terms of production structure, including the existing differences found in their farming structure.

DISCUSSION

Literature already presents international comparisons of farming productivity. Floriańczyk [2008] quantified the productivity of resources use in the EU member states' agriculture in period of 1999–2005, at the same time indicating that although the progress within this area was present in most the EU countries but its sources were different. In case of old member states it mostly resulted from technical advances, while new member states still had reserves in the way existing resources could have been used. Baer-Nawrocka and Markiewicz [2013] on the basis of the research on production factors productivity in member states of the EU-25, find the main determinant of use efficiency of production factors to be their mutual relations. Among the research on the consequence of international diversity of farming productivity the research of Kołodziejczak and Poczta [2002] must be mentioned, in which while comparing the efficiency of using the production factors in Poland and the EU-15 member states the researchers conclude that it is low productivity of production factors which decides about the spared production potential of Polish farming. The research carried on by Baer-Nawrockiej and Markiewicz [2012] focuses on analysing labour productivity in farming and it identifies the progres-

sing convergence within that field between farming regions of "the new and old EU". In turn Floriańczyk and Rembisz [2012] study how the growth in farming productivity determines its profitability and to what extent it is a function of increasing transfers. The results of the EU member states in a period of 2002–2010 indicate a growing transfer in incomes of new member states and a relative stability in the countries of the "old EU", along with the deterioration of productivity of the used production factors. Although, the above quoted research identifies the problem of low productivity of production factors in Polish agriculture against the EU-15 farming, they do not link them with structural conditions. In some measure that subject matter is presented in the work of Smędzik-Ambroży [2010], however, it is limited to analysing the diversity of productivity of Polish farms of various production types. In further research [Czyżewski and Smędzik 2010], which also covers the variety of agricultural holdings sizes, it is shown that the area is a much more significant factor differentiating productivity than the type of production. The research of Rzeszutko [2014] in which the author identifies a significant influence of relations between agricultural production factors and farming productivity in regions of Poland also seems interesting. Błażejczyk-Majka et al. [2011] deduce, while studying the dynamics of technical efficiency of agricultural production in 12 member states of "the old EU" in a period of 1989–2007, that "maintaining high efficiency in farming sector is possible thanks to a very low demand for land and labour and systematic decrease of fixed assets converted into the production size". In studying individual constituent elements of a total productivity, a division into moderate and Mediterranean climate regions emerged. Therefore, one can state that it is a common knowledge of a lower productivity of Polish agriculture in comparison to farming of the EU-15, however, the understanding of the reasons of such state of affairs still seems to require more analysis.

MATERIAL AND METHODS

The key element of success in realisation of assumed purposes is an appropriate choice of countries which will take part in the productivity comparison of production factors in agriculture. A taken choice criterion was the production structure represented by the variables illustrating the share of particular production in generating its full value and using UAA. The justification of such an approach is the conviction that the comparison of agricultural production efficiency is measurable only in case of agricultural holdings of similar production profile. A total productivity of a sector changes, depending on the type of production which is dominant in particular economy. Moreover, being aware of a significant influence of environmental variables (climate, land form, soil quality) on agricultural productivity and hindered measurement of those phenomena, an assumption was made that the answer to diverse climate conditions is the differentiation of farming production. Since it can be assumed that the agro-technical knowledge that farmers possess allows them to adjust the type of production to environmental conditions, therefore these structures can be a kind of "information medium" of the quality of agricultural production space. To measure the differentiation of a production structure of Poland and the other EU member states an index proposed by Kukuła [2010] was used, the formula of which is as follows:

$$\upsilon_{pl} = \frac{\sum_{i=1}^{k} |a_i - \beta_i|}{2} \quad (1)$$

where:
υ_{pl} – index of differentiation of production structure between Poland and member state;
k – number of EU member states;
i – EU member state;
α – a structure vector of a member state comparable to Poland;
β – a structure vector of Poland.

This indicator uses so-called urban distance for comparisons and its measure is normalised, ranging from [0, 1], while 0 means a maximum convergence of structures and 1 means maximum divergence. Obtained convergence results serve to choose three member states of the EU-15 of most comparable to Poland agricultural production structure. To present the efficiency of production factors use the measures of the efficiency and resource-absorption ratios were used [Pajestka 1981] which can be as follows:

Table 1. Variables used in the analysis of agricultural production structures of Poland and chosen EU member states

Variable	Description
Farm labour force	labour force, directly or non-directly employed by the holding, expressed in annual work units (AWU[g]), per holding, divided into groups according to utilised agricultural area[a] (UAA) and due to standard output[b] (SO[h])
Agricultural land use	utilised agricultural area in ha, per holding divided into groups according to utilised agricultural area, by land use[c] and due to standard output [d] (SO)
Number of agricultural holdings	number of agricultural holdings divided into groups according to utilised agricultural area, by land use[c] and due to standard output[d] (SO)
Size of standard output	a total standard output in euros, in individual group divided into groups according to utilised agricultural area, by land use[c] and due to standard output[d] (SO)
Value of produced agricultural products	value of produced agricultural products (excluding the value of provided services), in producer's prices (excluding taxes and subsidies to products), expressed in millions of national currency, divided into different types of products[e]
Direction of agricultural land use	utilised agricultural area in ha, per specified direction of agricultural production[f]

Eurostat codes: [a]ef_olfaa; [b]ef_lflegecs; [c]ef_kvftaa; [d]ef_kvftecs; [e]aact_eaa01; [f]ef_oluft; [g]Regarding a big input of part-time labour and seasonal employment of temporary workers, the labour input in agriculture was expressed in conventional annual work units (AWU). AWU corresponds to the work performed by one person who is occupied on an agricultural holding on a full-time basis. In Poland it is assumed to be 2120 hours performed a year as an equivalent of full-time work (annual work unit) [GUS 2015]; [h]SO – standard output is the 5-year average of an agricultural product (crop or livestock), is the average monetary value of the agricultural output at farm-gate price, in euro per hectare or per head of livestock in a year, in average conditions for individual region [GUS 2015].

Source: Eurostat database (http:// ec.europa.eu/eurostat/web/agriculture/data/database (accessed: 21.01.2016).

$$P_a = \frac{Y}{a} \tag{2}$$

$$C_a = \frac{a}{Y} \tag{3}$$

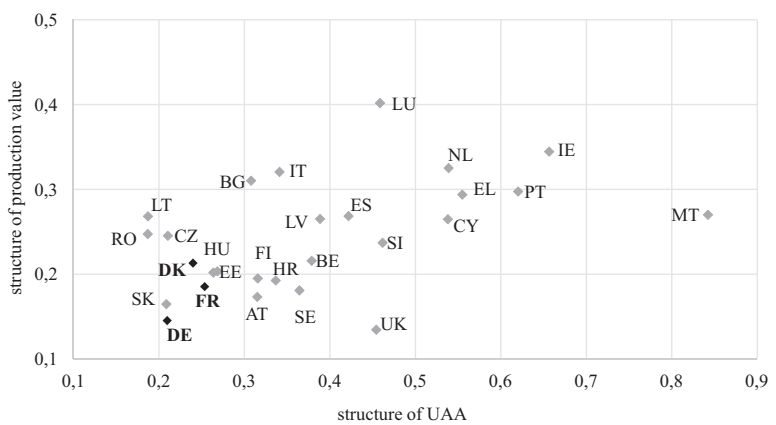
where:
P_a – productivity of production factor a;
Y – total production;
a – factor a resources;
C_a – use absorption of production factor a.

The research uses Eurostat data collected within Farm Structure Survey. The detailed description is presented in Table 1.

Agricultural structures will be presented in two dimensions – divided according to the criterion of holding size (area) and according to their economic size measured by SO. Then, for each subcategory of area and economic size, the ratios of labour and land productivity will be calculated. Due to the lack of data of an appropriate aggregation level, capital factor was omitted.

RESULTS

As a result of the above described procedures the convergence indices of production structure and UAA use structure were obtained for 28 member states of the EU (Fig. 1). The closer to the origin of coordinates an individual country is, the bigger the convergence with production structures of Poland is.



BE – Belgium, BG – Bulgaria, CZ – Czech Republic, DK – Denmark, DE – Germany, EE – Estonia, IE – Ireland, EL – Greece, ES – Spain, FR – France, HR – Croatia, IT – Italy, CY – Cyprus, LV – Latvia, LT – Lithuania, LU – Luxemburg, HU – Hungary, MT – Malta, NL – the Netherlands, AU – Austria, PT – Portugal, RO – Romania, SI – Slovenia, SK – Slovakia, FI – Finland, SE – Sweden, UK – The United Kingdom.

Fig. 1. Convergence of agricultural production structure and utilised agricultural land use between Poland and other member states of the EU in 2013

Source: Own elaboration on the basis of Eurostat data (accessed: 21.01.2016).

Data presented in Figure 1 indicate that further research should include following countries: Germany, France and Denmark (from the group of the EU-15). The first of these countries is characterised by the biggest convergence of production structures when compared to Poland, the convergence of the other two is significantly lower. Despite a relatively high level of convergence between enumerated countries and Poland, one can distinguish several fields in which those member states differ significantly from one another. Analysing the structure of utilised agricultural area use we can notice a dominant role of cereals[1] in Poland (52%) and Denmark (55%), along with a significantly lower share in Germany (39%) and France (35%). Denmark alone stands out from the rest of the group in terms of the share of meadows and pastures which, in this member state, is visibly lower (7% against 22–30% in other countries). The situation of Poland is similar when it comes to fodder crops (6% against 17–22% in remaining member states). It is worth to pay attention to a relatively big share (although on a small scale regarding a total area of UAA) of fixed cultivation of fruit and vegetables in Poland (2.5% against maximum 0.6% in other member states) and vineyards in France (2.86% against 0.6% in other countries). Concerning the structure of agricultural products value the analysed countries were more convergent, although even in this field some lagging differences can be noticed. In the field of livestock Denmark stands out compared to other countries and its share in a total production is definitely higher (38% against 24–28%). In case of animal products France has a definitely lower share in their production structure (15% against 22–28%). Poland, in turn, is characterised by a significantly bigger share of vegetable and fruit production and kitchen gardens (16% against 7–12%). In German production structure a relatively essential part consists of fodder crops (16% against 4–9%), in France it is wine (14% against maximum 2.4%). Clearly, it can be seen that although all the analysed countries belong to the EU-15, even in this group there is significant divergence. For further analysis the data concerning agricultural holdings divided into groups of economic size (Table 2) and UAA (Table 3) were used.

Data presented in Table 2 prove a common belief on a higher productivity of labour force in economically stronger agricultural holdings, which results from a production concentration and returns to scale. However, the pace at which, along with the increase in production, the productivity grows, differs in individual countries. In case of labour force efficiency it grows steadily, especially in Germany and France, though in the groups of the strongest agricultural holdings Germany stands out positively (upward) compared to France. Denmark is characterised by a slightly lower productivity in the group of the smallest farms, but still, in all other groups, especially in the group of the strongest agricultural holdings, uses labour force most efficiently. Comparing the differentiation[2] of efficiency in individual countries, one can see that it grows along with the economic force of the agricultural holdings to reach its maximum in the group range of 8–15 thousand EUR of SO and then it starts decreasing. It is equally high, as in the mentioned group, in the group of the strongest agricultural holdings, however, it results from a much higher variability in Denmark. Polish agriculture is characterised by the lowest labour

[1] The aggregate cereals include wheat (common, durum and spelt), rye, barley, oats, grain maize, rice and other cereals.
[2] To quantify the differentiation level the variation ratio was used.

Table 2. Productivity of land and labour in agricultural holdings of different economic size in 2013 in Poland, Germany, France and Denmark

SO (thousand EUR)	<2	2–4	4–8	8–15	15–25	25–50	50–100	100–250	250–500	>500
					EUR·AWU^{-1}					
Poland	1 395	2 713	4 244	6 916	10 521	16 912	29 907	54 076	79 384	95 404
Germany	3 310	6 976	11 615	17 813	23 462	31 871	45 874	77 376	126 894	135 313
France	2 684	6 962	11 612	15 658	21 814	31 236	50 193	81 655	109 137	123 577
Denmark	2 426	6 781	16 383	25 894	34 615	44 638	65 183	100 222	157 582	260 657
					EUR·ha UAA^{-1}					
Poland	578	819	954	1 136	1 385	1 603	1 729	1 982	2 182	2 733
Germany	128	525	830	1 064	1 230	1 500	1 939	2 516	3 205	3 429
France	151	345	553	807	977	1 041	1 263	1 727	2 534	6 265
Denmark	111	335	841	1 131	1 258	1 298	1 429	1 775	2 734	5 552
					EUR·agricultural holding^{-1}					
Poland	1 131	2 895	5 716	10 981	19 318	34 936	67 998	147 204	343 751	1 341 425
Germany	1 045	3 188	6 159	11 239	19 618	36 094	72 557	161 860	346 375	1 161 145
France	972	3 008	5 881	11 297	19 779	36 580	73 089	161 858	337 886	895 176
Denmark	1 258	2 991	6 202	11 304	19 598	35 813	71 384	159 083	362 152	1 246 978

Source: Own elaboration on the basis of Eurostat data (accessed: 21.01.2016).

force productivity in all the groups. The smallest difference[3] is noted in the group of SO of 150–200 thousand euros, while the biggest is in the SO group of 4–8 thousand EUR. Similar observations can be made in relation to land productivity, in case of which the influence of production concentration and returns to scale is also visible, smaller though than in case of labour force efficiency. It means that the land productivity growth, conditioned by the increase of production scale, is smaller than the growth of labour efficiency. As far as the growth comparison among the countries is concerned, then in this case they are more alike, although all the analysed member states clearly differ in terms of land productivity in the group of the strongest agricultural holdings (more than 500 thousand EUR of SO). However, the biggest diversity was in the group of the smallest farms (less than 2 thousand EUR of SO), the smallest in the group of medium agricultural holdings – the group of 15–25 thousand EUR of SO. Polish situation looks interesting against other analysed countries. Since, it appears that land productivity in Polish agriculture is the highest in all the groups where SO is less than 50 thousand EUR. Only the highest scale of production determines relative deterioration of Polish position. This leads to interesting

[3] To measure the level in which Poland lags behind other examined countries in analysed group an average of labour efficiency differences in Polish agriculture and it was confronted with an average efficiency of a whole group.

conclusions that in Poland small and medium agricultural holdings are more efficient than in compared EU-15 countries which, however, does not influence a higher efficiency of all the sector, because here, a crucial impact has the size of the group and its share in the use of the land. In Poland up to 63% of the UAA is allocated in groups, which are characterized by higher land productivity, than in Denmark, France and Germany, where share of the analogical groups in total UAA is 12–14%. This should result in overall higher land productivity in Poland than in comparable countries. It turns out, however, that the SO per ha in Poland is only 1,513 EUR, while in France 2,052 EUR, in Germany 2,770 EUR and in Denmark 3,657 EUR. On the worse productivity of land in Poland decisive impact has therefore less efficient land use in the strongest economically farms (over 250 thousand EUR SO), which much stronger stand out downward from similar farms in comparable countries, than weaker holdings stand out upward in their "categories". Finally, it is worth to study the statistics of an average production of an agricultural holdings coming from each group. It turns out that in this field the diversity is relatively low – it is only significant in case of the smallest and medium farms. The most interesting fact is that among the latter the highest productivity is characteristic for Polish agricultural holdings.

Another field of comparison includes farms grouped according to their physical size, that is UAA (Table 3). However, from the beginning, some drawbacks of this analysis must be stated. It will be obscured by specialist farms which do not cover a big area and which substitute that fact by capital. They will inflate the economic results of the smallest

Table 3. Productivity of labour and land in agricultural holdings of various UAA in 2013 in Poland, Germany, France and Denmark

UAA (ha)	0	<2	2–5	5–10	10–20	20–30	30–50	50–100	>100
EUR·AWU^{-1}									
Poland	58 410	3 047	4 013	6 999	12 487	20 294	28 844	43 089	66 881
Germany	264 800	45 560	45 804	30 810	38 180	51 808	69 032	106 014	124 489
France	135 706	28 936	38 453	49 213	52 015	57 006	63 290	76 714	105 708
Denmark	170 994	104 106	96 751	56 540	62 456	78 763	88 900	136 853	228 307
EUR·ha UAA^{-1}									
Poland	×	1 992	1 404	1 434	1 583	1 633	1 598	1 396	1 171
Germany	×	68 660	23 802	3 696	2 854	3 023	3 085	3 160	2 148
France	×	24 577	10 472	8 063	5 375	3 622	2 778	1 988	1 426
Denmark	×	685 877	39 325	4 187	3 120	2 518	2 366	2 843	3 536
EUR·ha UAA^{-1}·agricultural holding^{-1}									
Poland	×	1.34	3.25	7.08	13.79	24.12	37.93	67.73	277.97
Germany	×	1.01	3.35	7.31	15.02	24.84	39v04	70.69	270.60
France	×	0.92	3.30	7.14	14.22	24.59	39,58	72.34	175.92
Denmark	×	0.55	3.56	7.20	14.34	24.71	38.70	72.03	229.44

Source: Own elaboration on the basis of Eurostat database (accessed: 21.01.2016).

farms concerning the area. Therefore to show the whole picture this statistic should be presented when divided into three types of production farms. Nevertheless, such problem approach exceeds the frames of this paper. Within labour productivity a specific polarization can be noticed. It manifests itself in high labour efficiency in small and big agricultural holdings and low among the medium ones. Amongst examined countries the "polarisation" trend is convergent, however, labour efficiency alone differs significantly among the member states (average variation coefficient of approx. 51%). Also Polish results differ significantly from other countries, although along with the growth of farm size that "disparity" diminishes. However, the most interesting are the statistics which concern land productivity. Since it appears that negative influence of a decreasing incomes effect is stronger than positive returns to scale and along with the rise of UAA in agricultural holding their average productivity falls. In case of Germany, France and Poland land is the least productive in farms above 100 ha of UAA, while in case of Denmark it reaches its minimum in medium agricultural holdings – 30–50 thousand ha of UAA. It is also interesting that the variation of the analysed characteristic in the collective is significant but decreases forward the group of medium farms. It means that the smallest difference is perceived in the group of farms of 30–50 ha. The situation is very similar in case of lower land productivity in Poland – a relative difference is also the smallest in this range. In turn, comparing the average area of farms in each group, like in the analysis concerning economic size, also here in all the groups, except the extreme values, the results are similar.

CONCLUSIONS

The above presented research allows to draw following conclusions:

- The EU-15 member states of most similar production structure to Poland are Germany, France and Denmark, at the same time we can distinguish production directions in which Poland and mentioned countries differ significantly among one another. It mostly concerns the production of cereals, the share of meadows and pastures and the share of fodder crops in a total area of UAA.
- The research confirmed the presence of returns to scale in agriculture of all analysed countries which refer to farms ordered according to SO value whereas they are stronger in case of labour than land productivity. The differentiation among the countries is also higher involving labour productivity. Poland especially stands out from the EU-15 member states when considering labour efficiency. When it comes down to land productivity, than in groups of small and medium agricultural holdings (SO below 50 thousand EUR) that indicator was the highest in Poland. Small and medium farms in Poland are more efficient than in other compared EU-15 member states which does not influence a higher efficiency of the whole sector, which depends on results of economically largest agricultural holdings, which are significantly worse in terms of land productivity than the corresponding size farms in the comparable EU-15. An average SO per holding is generally lower in Poland (Polish farms are economically weaker), however, it does not concern the group of the biggest farms in which this indicator is the highest in Poland of all analysed countries.

- Among the farms, ordered according to UAA, we can notice a certain "polarisation" which manifests itself in the highest labour efficiency in small and big farms, and, in turn, low efficiency in case of medium agricultural holdings. While grouping the holdings according to the area of UAA the differentiation among the countries is also much bigger. In case of land productivity we can observe negative returns to scale – the productivity diminishes along with the rise of farms' area, although these results should be approached with caution because they can be influenced by the lack of distinction between production types.
- For Poland increasing agricultural labour productivity should be particularly important and it can be achieved by increasing mechanisation or transfer of excess labour force to non-agricultural sectors; such actions seem to be more urgent than changes of agricultural structure which characteristically is long-term for Polish agriculture lags behind other examined member states much more in case of labour than land productivity.

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PRODUKTYWNOŚĆ PRACY I ZIEMI W ROLNICTWIE POLSKI NA TLE WYSOKO ROZWINIĘTYCH KRAJÓW UNII EUROPEJSKIEJ

Streszczenie. W artykule dokonano analizy porównawczej produktywność pracy i ziemi w Polsce i państwach UE najbardziej podobnych do Polski pod względem struktury produkcji rolniczej – w Niemczech, we Francji i w Danii. Zróżnicowanie produktywności ukazano w rozbiciu na grupy gospodarstw o różnej powierzchni użytków rolnych i sile ekonomicznej. Badanie przeprowadzone dla danych z 2013 roku pozwoliło zidentyfikować, że w Polsce małe i średnie gospodarstwa są wydajniejsze niż w porównywanych krajach UE-15, co jednak nie wpływa na większą wydajność całego sektora, gdyż o niej decydują wyniki ekonomiczne gospodarstw największych. Rozbicie gospodarstw na grupy według powierzchni użytków rolnych prowadzi do wniosków, że najlepiej czynnik pracy wykorzystują gospodarstwa małe i duże, czynnik ziemi zaś gospodarstwa posiadające średni areał.

Słowa kluczowe: struktury wytwórcze, rolnictwo, analiza porównawcza

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NATIONAL ACCOUNTING MATRIX WITH ENVIRONMENTAL ACCOUNTS (NAMEA) – AN OVERVIEW OF ENVIRONMETALLY EXTENDED INPUT–OUTPUT ANALYSIS

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Abstract. Increasing human pressure on the environment results in the need for tools to precise identification of the environmental damage source. Environmentally-extended input–output analysis (EEIO) is an answer for that demand. National accounting matrix with environmental accounts (NAMEA) is one of the attempts to create complete EEIO tables. The aim of the paper is to present NAMEA tables as an useful source of data and tool which allows to conduct environmentally-extended input-output analysis in relation to environmental policy. NAMEA tables show emission data per sector. The aim of it is to integrate environmental data with data on economic activity as recorded in the National Accounts framework. NAMEA tables are a useful data source and tool for both environmental policy and another economic studies and researches.

Key words: national accounting matrix with environmental accounts, NAMEA, input–output analysis, environmentally-extended input–output tables

INTRODUCTION

Since 1970s it become a common knowledge and realization, that input–output analysis can be used in environmental policy. Wasily Leontief created an expanded input–output tables, however quality of data referred to environment was very limited. Environmentally-extended input–output analysis (EEIO) was under constant interest of both scientists and politics and was being developing. It is very important to understand the nature and the scale of impact made by different sectors of the economy on the natural environment. It is a clue point in order to achieve and maintain sustainable development.

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However, the usage of environmentally-extended input–output analysis has been very limited since its development due to many reasons. Two decades later European Union Statistical Office – Eurostat started working on developing a new tool, which can possibly be another milestone step in this topic – national accounting matrix with environmental accounts – NAMEA. Over the years it became a complex tool, though it is still in the process of developing. Data collected within NAMEA are available openly and for almost all European countries. Therefore, it can be used to fulfil the gap, that was being a restrain in developing complete EEIO analysis.

The aim of the paper is to present NAMEA tables as an useful source of data and tool which allows to conduct environmentally-extended input–output analysis in relation to environmental policy.

INPUT–OUTPUT ANALYSIS (IO)

One of the basic instruments to assess the state of the economy input–output analysis. Typically, this tool is used at the macroeconomic level, to assess the relationship between different sectors of the economy or to assess the impact of international trade on economy. In practice input–output analysis can be used in microeconomics as well. In this case instead of the whole economy one estimates the flow of goods and energy connected with a certain product.

The legitimacy of the inter–sector analysis was first noticed by François Quesnay, who analyzed three sectors: agriculture (production class), the non-agricultural sector, for instance services and trade (sterile class) and land owners (proprietary class). His results were presented in the form of an economic table [Sulmicki 1959, Czyżewski 2011]. In this simplified graphical form Quesnay tried to explain general economic interdependencies [Ruiz and Pellet 2011].

The development of inter-sector approach to the economy have been presented in the works of Léon Walras, who sought to maximize the role of mathematics in economics in order to make it similar to the natural sciences. He developed the theory of general equilibrium, which to this day is the basis for the evaluation of input–output. His system of interdependent equations accurately showed that the economic balance of the households and the balance of final goods is consistent with the balance of enterprises and of production factors [Landreth and Colander 2005]. General equilibrium, clear and stable mechanisms for calculating flows between the various branches of economy were the way to achieve the increasing importance of economics as a science.

The development and systematization of the method of calculating input–output tables has been made by Leontief [1936], who divided the economy into several groups and described the relationship between them with inputs and outputs. The results are presented in the form of matrix. Usually the results are divided into four groups. Indirect demand associated with the different phases of production belong to the first one. The second group consist of data connected with final demand. The third section presents the macroeconomic effects created in particular sectors and analyzed from the perspective of income. The fourth part concerns the distribution of generated income. It happens (for instance in the case of statistics carried out by the Polish Central Statistical Office), that the fourth part is not analyzed and published.

Publications of above mentioned three scientists (Quesnay, Walras and Leontief) are the basis for the construction of modern input–output models. The modern solutions are based on the same basis [Miller and Blair 2009], differing only in details such as the selection of the data (and their sources), the assessment of the particular branches (the amount of products calculated in the branch) or the method of valuation of the branch. General principles and logic of the construction of the matrix usually remain unchanged. The differences often arise from the purpose of the survey. The exception is the issue of input coefficients. In most cases, according to Leontief, it is assumed that the proportions between the production factors are fixed. In some cases, for instance using translog production function (Dale W. Jorgenson), this assumption can be changed [Samuelson and Nordhaus 1999].

As already mentioned, input–output flows are an effective tool to assess the state of the economy. Understanding the interdependencies in the economy allows the state to make more informed decisions and development policies. Analysis of input–output also enables the evaluation of the structure of expenditures. In this regard, one can explore both indirect and direct costs as well as current and capital expenditure. Relevant factors allow to assess the effectiveness of the sector. However, one must remember that quantitative indicators may not be sufficient to give a clear answer concerning the importance of the sector. In extreme cases the sector with little economic significance may be extremely important for another much more profitable branch of economy or may have a strategic importance for security.

ENVIRONMENTALLY-EXTENDED INPUT-OUTPUT TABLES (EEIO)

Input–output analysis may also be used in environmental policy. Leontief [1970] already proved it by creating an expanded input–output tables. Increasing human pressure on the environment results in the need for tools to precise identification of the environmental damage source. It is necessary to maintain environmental balance and quality of life. Traditional input–output analysis give insight into the product flow between different economic sectors. Monetary analysis allow to estimate the value of economic transactions between different sectors in economy, including output for exports, capital formation and final consumption. Such information can be extended with environmentally related data usually treated as externalities, for instance resource use and emissions [Batten 1981, Dobos and Tallos 2011]. Such analyses are called environmentally-extended input–output tables (EEIO) – this is a long-established technique that continues to grow in popularity as a method for evaluating the relationship between economic activities and downstream environmental impacts. It can be used in various aspects, for instance as a method of assessing the overall human pressure on the environment, analysis of the sources of emissions (like greenhouse gases, nitrogen), and also as a method of identifying sectors of the economy essential from the point of view of the resource consumption (like water, the land, the living resources leading to the degradation of biodiversity) [Kitzes 2013]. There are even attempts to use EEIO as an instrument to measure global flows of resources [Tucker 2011].

Environmental input–output tables can be used to achieve three basic objectives [Tukker et al. 2006]:

- environmental problem analysis (the nature and causes of environmental problems);

- prospective effect analysis of policies (ex ante prediction of effects of policy measures);
- monitoring and ex post effect analysis of policies (analysis of impact and effectiveness of policy measures, including time series analysis).

The EEIO has an important advantage. It is the combination of monetary and environmental data. Due to this it is possible to identify the consequences of the impact of the economy on the environment and an indication of the relationship between production and consumption of resources and emission of harmful substances into the environment. These data can be analyzed in different ways, for instance on the macroeconomic scale (sectoral perspective) or microeconomic scale (product perspective). The starting point is the use of input–output tables created in physical terms (physical input output table – PIOT), which allows to specify material consumption and the harmfulness of a given economic sector. These data, if possible, can be supplemented by the monetary valuation. However, it is worth remembering that it is not always possible to clearly calculate the value of external effects (both environmental and social one). Furthermore, various studies may use separate methods of such calculation. This means that various EEIO analyses should be treated with caution, especially in the case of the results comparison.

International input–output analysis can be environmentally extended too. The tables built this way can give significant information about international environmental pressure. It is especially important in the case of wealth countries and regions, which rely on import of many goods. In many situations the imported goods require a lot of resources or energy. In addition, their production is connected with heavy pollution. The restrictions of typical environmental policy force companies to outsource such unpleasant production. Input–output tables can show such trade and describe the amount of pollution and resource consumption attached to foreign trade. In this way one can find out about real environmental pressure connected with consumption of particular goods (usually without the environmental cost of international transport). However, in many EEIO the international flows lack the data about technological aspects of production, like energy efficiency or resource consumption [Mayer and Flachmann 2011].

The EEIO is a powerful tool, which help to implement the sustainable development. It can be used on the macroeconomic scale to asses the situation of a whole economy or to serve as a tool in particular sector. For instance, it is used in forestry [Mattila et al. 2011]. An implementation of sustainability means that social aspects of flow between sectors should be included into analysis. It is even more difficult than implementation of environmental one, especially at the international level, because social attitude can vary depending on the cultural system.

The EEIO can be useful in many situations. Usually it helps to valuate the flow of goods and emissions. Such valuation can be used not only as an information about intersectoral environmental pressure, but also as an ecological guide for investments. The investor can estimate how many harm to the environment can be made due to the capital expenditure, and choose between possible options [Shmelev 2010].

The results of the published environmental input–output tables [Mrówczyńska-Kamińska 2014] indicate that this tool is an effective way to take into account externalities in the national economy and its various sectors.

NATIONAL ACCOUNTING MATRIX WITH ENVIRONMENTAL ACCOUNTS (NAMEA)

This technique shows emission data per sector. That means, that its consist only emissions and does not include IO tables themselves or EEIO tables themselves. The aim of NAMEA is to integrate environmental data with data on economic activity as recorded in the National Accounts framework [Eurostat 2002]. It is a hybrid flow account, which denotes a combination of national accounts data, mainly in matrix format, for instance supply and use tables, and environmental accounts, for instance waste accounts (Fig. 1) [Eurostat 2009]. NAMEA is a conceptual tool that links conventional national accounts and environmental accounts. It jointly presents environmental and economic data broken down by industry and household categories [Luksch et al. 2006]. It helps to identify the sources of emissions. It is also a conceptual tool that organizes and holds information on the economy and the environmental pressure expressed in monetary and physical units [Eurostat 2006]. The final goal is to construct comprehensive environmentally extended input–output tables, however it was not achieved yet. There is no obligation for EU countries to construct NAMEA tables.

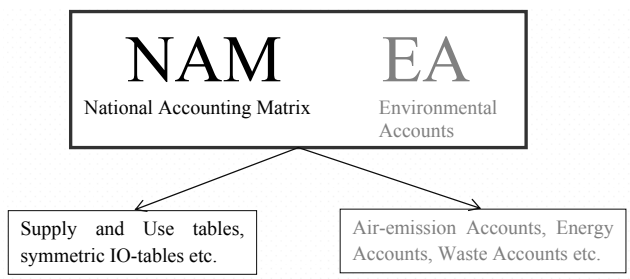

Fig. 1. Schematic of hybrid flow accounts identifying the two main components, a national accounting matrix (NAM) and environmental accounts (EA)

Source: Eurostat [2009].

Tables of NAMEA started being produced by the Dutch Central Bureau of Statistics in the 1990s [Eurostat 2002] or, in accordance to another source [Ostergren 2008], in late 1980s. It quickly becomes clear that there would be an added value in such tables, therefore Eurostat started to work at NAMEA tables at European level. The first Eurostat workshop on NAMEA was held in 1995. Since then, there has been extensive development of NAMEAs in EU countries. Four years later 11 pilot studies on NAMEA for air emissions were available. In 2000, a set of NAMEA for air emissions standard tables was prepared by Eurostat focusing on air emissions but also cover some economic data. These tables were later revised in 2002 in order to improve the comparability of data between countries as well as with other air emission statistics. The new set of tables was finally sent out as a starting point for a collection of NAMEA data on a regular basis [Eurostat 2004].

Currently NAMEA-Air – NAMEA tables for air emissions, are quite sufficiently developed. There are no complete NAMEA tables on emissions to other compartments and

on resources extracted from nature. The availability for NAMEA tables with regard to other environmental media, for instance emissions to water and soil and the use of natural resources is very limited. Only several countries developed national NAMEA tables for emissions other than to the air, for instance the Netherlands, Sweden, Denmark and Germany are quite advanced in NAMEA-Water tables [Tukker et al. 2006]. Several countries have compiled NAMEA tables on energy and resource use, water use, wastewater and solid waste [Eurostat 2001a]. Dutch NAMEA tables cover following themes: the greenhouse effect, ozone layer depletion, acidification, eutrophication, solid waste, wastewater and the exploration of crude oil and natural gas [Schanau et al. 2010].

In accordance to NAMEA-Air Figure 2 illustrates how national accounting supply and use tables as well as environmental accounts – emissions – can be expanded to complete NAMEA. The left side of the figure is the NAM, which consists of the supply and use tables of the ordinary national accounts. The right side of the figure (EA) shows that production activities result in emission as well as in goods and services (the last ones are covered by traditional accounts). It is important to mention, that whilst NAM part is presented in monetary terms, the EA part is presented as physical data.

Although NAMEA-Air is the best elaborated type of NAMEA tables in most EU countries [Tukker et al. 2006], it is very important do notice, that even if it is the best elaborated among all NAMEA tables it is still "merely an overview of environmental interventions per sector, including some private household activities" [Tukker et al. 2006]. Furthermore, according to Eurostat report [Eurostat 2005a], "the full use of the NAMEA--Air framework is highly dependent on the different countries delivering the actual data. This they do not do even today. The response rate is quite low and missing data has had to be estimated". However, situation is getting better each year.

NAMEA-Air compilation guide lists around 20 substances for inventory in three priorities [Eurostat 2004]. Priority 1 includes greenhouse gases: carbon dioxide, carbon dioxide from biomass, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Priority 2 includes some other substances: nitrogen oxides,

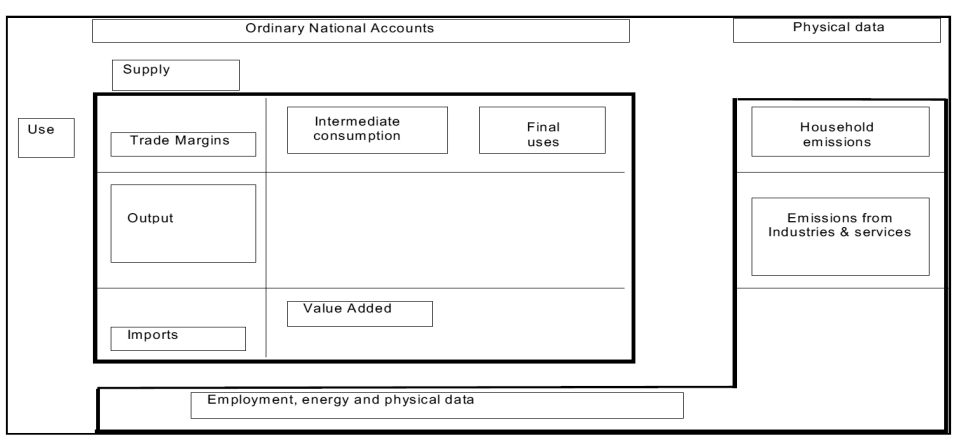

Fig. 2. Schematic description of NAMEA-Air

Source: Eurostat [2001b].

sulphur oxides, ammonia, non-methane volatile organic compounds, carbon monoxide, particulate matter, chlorofluorocarbons, hydrochlorofluorocarbons, mercury, lead, cadmium. Priority 3 includes some heavy metals: arsenic, zinc, chromium, selenium, copper, nickel. Furthermore energy accounts are included. Because there is no legal obligation to provide those data by EU countries, the priorities are made only to show where to start with gathering data if resources are limited.

The current NAMEA-Air tables have also another limitation in usage. Not each EU country cover all the priorities and they do not provide date about the same emissions. For instance, the Italian NAMEA-Air includes 10 pollutants: carbon dioxide, sulphur oxides, nitrogen oxides, nitrous oxide, ammonia, methane, carbon monoxide, non-methane volatile organic compounds, lead and particulate matter [Tudini and Vetrella 2004]. Data bases available at Eurostat network cover emissions of: nitrogen oxides, methane, nitrous oxide, carbon dioxide and sulphur oxides. Some further emissions are described in different reports and studies. Even if all countries provide Eurostat with all substances' emissions there are still only around 20 substances and it covers just a small number of total emissions to the air.

Table. NAMEA-Air data availability for EU-15 countries[a]

Period	BE	DK	DE	GR	ES	FR	IE	IT	LU	NL	PT	FI	SE	UK	AT
1990		X		X		X		X		X				X	X
1991		X	X	X		X		X		X				X	X
1992		X	X	X		X		X		X				X	X
1993		X	X	X		X		X		X			X	X	X
1994	X	X	X	X		X	X	X		X			X	X	X
1995–present	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

[a] Some data from BE, GR, ES, FR, LU, PT, FI and SE in the time frame from 1995 till present are estimated.
Source: Eurostat [2005a], own study based on ec.europa.eu/eurostat.

Based on information from the Table it can be said, that EU-15 countries have been providing Eurostat with required data since 1995, though some of the data have been estimated. At the beginning of analyzed period only a few countries provide Eurostat with data as it was a beginning of gathering information about emissions. Since 1995 it has become a wider initiative. Among new EU countries (accessed in or after 2004) only Cyprus, Poland and Lithuania provided Eurostat with adequate data in 2005 [Tukker et al. 2006]. Fortunately, since than situation has improved.

Another problem is that currently there are only national NAMEA-Air tables. There is no easy way to create an European NAMEA-Air table. Each national NAMEA-Air table includes emissions by sectors as well as imports and exports. The last ones are not linked to foreign sectors or countries, therefore connecting all national NAMEA-Air tables into one European one is not a simple task [Tukker et al. 2006].

Besides some limitations national NAMEA tables (if exist) can be still use to undertake some analysis and studies. For instance, Weidema and cowriters [2005] did an extensive study into the environmental impacts of products for Denmark. Danish NAMEA tables were used as a basis. Dutch NAMEA tables were used several times in different

studies and reports analysis [Schanau et al. 2010]. The NAMEA was also listed as a source of data required to assess the indicators for sustainable consumption and production (like energy and material) as well as an useful statistical tool for monitoring sustainable development in European Union [Eurostat 2006, 2007].

In order to provide any comprehensive support to any of the policy fields requested for European Union NAMEA tables have to be more complex and connected with IO tables as well as material flows tables.

Tukker and cowriters [2006] described the possibility to construct NAMEA++ tables, which would be a comprehensive environmentally extended input–output tables. It will use European data, both for the monetary part and for the environmental one. It will, however, require much more specific and detailed data than the ones available at present days. Eurostat in official statistical requirements listed some objectives to achieve, which includes publication of first regular publication of NAMEA-Air results and first EU-25 estimation additionally [Eurostat 2005b] as well as develop NAMEA-Water and NAMEA-Waste [Eurostat 2008]. Eurostat is also working on developing energy accounts, which are sometimes referred to as NAMEA-Energy [Eurostat 2013]. The objective is to establish energy accounts (with a priority on physical flow accounts) in the European Statistical System (ESS). Data collection will start in 2011. For the first 4–5 years this data collection will be however on a voluntary base.

CONCLUSIONS

Presented overview of NAMEA tables confirms, that it is a useful data source and tool for both environmental policy and another economic studies and researches. Gathering data necessary to conduct a complete environmentally-extended input–output analysis NAMEA tables provide scientists and politicians with possibilities that were not available earlier. It would open a way to understand the real impact made by different sectors of the economy on the natural environment and to achieve sustainable development.

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NATIONAL ACCOUNTING MATRIX WITH ENVIRONMENTAL ACCOUNTS (NAMEA) – STUDIUM PRZEPŁYWÓW MIĘDZYNARODOWYCH Z ROZSZERZENIEM ŚRODOWISKOWYM

Streszczenie. Rosnąca presja człowieka na środowisko naturalne rodzi zapotrzebowanie na narzędzia do precyzyjnego zidentyfikowania źródeł zanieczyszczeń środowiska. Odpowiedzią na to zapotrzebowanie jest analiza przepływów międzynarodowych z rozszerzeniem środowiskowym (EEIO). National accounting matrix with environmental accounts (NAMEA) jest jedną z prób opracowania tabel EEIO. Celem artykułu jest przedstawienie tablic NAMEA jako użytecznego źródła danych oraz narzędzia do przeprowadzania analiz przepływów międzygałęziowych z rozszerzeniem środowiskowym w odniesieniu do polityki środowiska. Tabele NAMEA zawierają dane dotyczące emisji z poszczególnych sektorów. Celem NAMEA jest integracja danych środowiskowych z danymi dotyczącymi działalności gospodarczej, zarejestrowanych w ramach rachunków narodowych. Tabele NAMEA są użytecznym źródłem danych oraz narzędziem zarówno dla potrzeb polityki środowiska, jak i innych studiów oraz opracowań ekonomicznych.

Słowa kluczowe: national accounting matrix with environmental accounts, NAMEA, analiza przepływów międzygałęziowych, tabele przepływów międzynarodowych z rozszerzeniem środowiskowym

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CLUSTER DEVELOPMENT STRATEGY IN THE CONTEXT OF THE "KEY NATIONAL CLUSTER" COMPETITION

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Abstract. The role of cluster development strategy is discussed, in the context of Polish "Key National Cluster" (KKK) competition. According to formal KKK regulations, the status of a key national cluster can only be granted to those selected few clusters which fulfil the detailed preconditions stated in the document, such as the postulate to offer support for regional specialisation. The paper places emphasis on the significance of management, as an area of great impact in the determination of key status of clusters. In fact, the KKK competition is designed to evaluate formal strategies of cluster development in a multi-stage approach, including expert feasibility studies. In addition, the paper discusses changes in the national approach to cluster policy, as observed in the statutory activities of Polish cluster support system over the last few years. Those changes were dictated by the need to offset the general tendency to place emphasis on the quantitative aspects of development, as opposed to the postulated focus on the quality and competitiveness of cluster structures.

Key words: strategy, cluster, key national cluster

INTRODUCTION

Cluster support has been a subject of increased interest over the recent years, both in professional literature and in practical business application. Despite considerable outlays offered in support of formation of new clusters and cluster agglomerates, many beneficiaries of such aid have since perished or found themselves at the verge of profitability, hoping for the next edition of the financial support programme to provide them with means to continue their operation. Observations of trends and potential directions of aid funds directed to this type of enterprises suggest that only the fittest have a chance to survive in the foreseeable future. Such was the main premise behind the idea of "Key National Cluster" competition (KKK). According to the programme's formal assumptions, KKK

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serves to identify and officially recognise clusters of key significance for Polish economy, with good potential to compete on international markets. In this sense, KKK awards should be interpreted as yet another of the many instruments available for the realisation of the national innovation policy, and, consequently, of great impact for the development of Polish economy. Analyses of formal cluster development strategies are one of the crucial elements of evaluations conducted under the KKK programme.

This paper presents the role of formal development strategies in the evaluation of clusters, in the context of their application for the status of a key national cluster. Formal and merit criteria are also discussed, as required from clusters that apply for the KKK status or its prolongation.

THE NOTION OF STRATEGY

Strategy of development plays an increasingly important role in the operation of enterprises, also those of specific characters – such as clusters[1]. While companies have long adjusted to the need to formulate strategic objectives in formal documents, the same cannot be said for other types of institutions (e.g. clusters) where formulation and implementation of formal strategies is a fairly recent notion.

Despite considerable outlays, including the EU fund support for cluster development, some of them are doomed to fail, because their present form of operation does not offer them any competitive advantage. Furthermore, some of them have never had a chance to develop proper cooperation networks within their structure. Consequently, only the strongest contenders have a prospect of surviving on the market – ones that have a clear mission and vision, expressed both in operational and development-related dimensions.

However, it must be noted that the above approach to cluster operation and functions is also fairly recent, and that it received proper recognition only after the introduction of the KKK programme which places great emphasis on the need for key clusters to have a solidified and formally expressed strategy of development.

To begin with, it may be useful to define the notion of strategy. It must be noted that the theory of management provides no universal definition of the term, and the available approaches tend focus on different aspects of the process. According to A.D. Chandler, strategy is the determination of the basic long-term goals of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals [Moszkowicz 1994]. P.F. Drucker in his definition places main emphasis on the analysis of the present situation; in his approach, strategy involves determination of the present conditions, which may be followed by change, if such a change is found to be beneficial for the company [Koźmiński and Piotrowski 2010]. G.A. Steiner in his broad

[1] One of the most popular definitions of clusters, by M.E. Porter, identifies them as: "geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries and associated institutions (for example universities, standards agencies and trade associations) in particular fields that compete but also co-operate. Critical masses of unusual competitive success in particular business areas, clusters are a striking feature of virtually every national, regional, state, and even metropolitan economy, especially those of more economically advanced nations" [Porter 2001].

definition of strategy includes supplementary aspects of the process: company mission, plans for development, and operating programs, together with means and methods required for strategy implementation and realisation of company organisational objectives [Koźmiński and Piotrowski 2010].

It may also be interesting to note that, apart from many definition of strategy, professional literature provides a number of strategy classificationsbased on various criteria (for instance, offensive versus defensive strategy).

To sum up the preliminary findings, strategy may be considered as one of the basic and fundamental instruments for managerial purposes, and a source of potential success of companies (and clusters) on the market.

THE EVOLUTION OF CLUSTER FORMATION AND DEVELOPMENT PROCESSES IN POLAND

Changes in formal approach to cluster support in Poland resulted from the lack of universal (or standard) model of a cluster support policy, despite strong involvement on the part of the EU legislator. Some Member States have already introduced their own comprehensive programs of cluster support, while others attempt to capitalise their results using a benchmarking approach to analyse, modify and adjust the most effective instruments to the requirements of their domestic markets.

The early approach to the policy of support for cluster development in Poland had the following characteristics [Szultka 2012]:

- strong role of the coordinator;
- inter-regional differentiation;
- the lack of coordination between the regional and the national level;
- high dispersion;
- soft support (as opposed to financial support for investment);
- cluster cooperation (as opposed to business cooperation).

It must be noted that the cluster development policy in Poland – or, more accurately, formal support for cluster development – has intensified with the increase of EU funds directed to this sector, with a marked expansion of cluster-type formations observed after 2007. A 422 million PLN was assigned as support for cluster formation, with further 71 million additional aid for cluster development in eastern regions of Poland, and 14 million to support coordination and information dissemination activities. A sizeable support was also directed from regional (self-governmental) authorities within the framework of EU Regional Operational Programmes [Zachariasz 2012].

Despite such strong support for cluster formation, many beneficiaries have already failed to survive on the market, and numerous others will follow suit before the end of the present edition of the cluster support programme. This, in part, may be a result of the adopted practice of forming clusters with the intention of soaking up the EU funds, as opposed to a purely market-oriented approach. The present condition of clusters in Poland is clearly a direct consequence of this approach.

In view of the above, the present cluster support policy, as part of the regional support programme, was designed to stimulate their competitive advantage and to transform com-

pany agglomerates into dynamic clusters integrated around common goals. The activities in this respect are mainly focused on:

- research and development;
- support for cluster expansion to foreign markets;
- development of human capital and its quality;
- stimulating inter-sectoral cooperation;
- support for new enterprises.

The regional development policy offers support for cluster-type organisations and other actors involved in cluster management. To be eligible to receive this type of support, cluster organisations or cooperation networks are required to satisfy certain preconditions, such as the involvement of regional authorities and the potential for cooperation between self-government authorities, scientific centres and market organisations. Their operating activities should also be in line with the requirements and the objectives of other policies: industrial, transportation, infrastructure, investment (including FDI), and science [*Krajowa Strategia...* 2010].

The central idea behind the Key National Cluster programme was to eliminate the deficiencies of the former round of support. Status of a key national cluster is designed to recognize and confirm the recipient's competitive advantage and economic significance, both in regional, national and global dimension. In line with the KKK definition, the key status of clusters is recognised on a national level based on a number of criteria, such as: critical mass, potential for development and innovation, the scope of present and prospective cooperation,the experience and market potential of the coordinating entity, and the quality of management (http://www.mg.gov.pl/Wspieranie+przedsiebiorczosci/Polityki+przedsiebiorczosci+i+innowacyjnosci/Klastry/Krajowe+Klastry+Kluczowe, accessed: 29.10.2015).

It is also worth noting that the number of cluster formations should be limited, since it seems quite unreasonable to expect for Poland to build its competitive and innovative position in many areas in parallel. Lastly, the formal recognition of key national clusters should be based on reliable evaluations of Poland's economic potential and feasible plans for its development through the use of various technological and non-technological innovations, R&D, and other instruments that increase the chance for knowledge transfer and the advance of new technologies.

CRITERIA FOR THE EVALUATION OF FORMAL CLUSTER DEVELOPMENT STRATEGIES

Local administration bodies are increasingly more involved in the task of formulating strategies and programmes for economic development – this trend is also observed with relation to cluster policies, as evidenced by the "Key National Cluster" competition. In line with the guidelines of this programme, candidates are required, among other things, to demonstrate their commitment to a strategy of development. It must be noted, however, that the evaluation of this requirement is not reduced to a mere ascertainment of the fact, but involves a number of merit-based aspects of such a strategy. For the subsequent editions of the programme, the strategic documents submitted by candidates will be sub-

ject to formal and substance examination and expert evaluation (in the form of an expert panel).

With respect to formal requirements, the legislator stipulates for clusters to "have a formal and updated document expressing their strategic objectives. The form of such document is open. The strategy should cover a period of no less than three consecutive years. Such strategy should be accompanied by an updated plan of activities, detailing bundles of projects for the realisation of the company vision and the strategic objectives expressed in the document, together with suitable benchmarking methods" (http://www.pi.gov.pl/PARP/chapter_86197.asp?soid=6701640B52A54EE3A5BCA9CF2EADC9F6, accessed: 26.07.2015). At this stage of the evaluation process, verification is based on analyses of submitted strategies and other associated documents. Regulations of KKK put a strong emphasis on the duration of strategic plans – they must cover a period of at least three years in advance. It must also be noted that this stage of formal evaluation is only a first of the three stages of the comprehensive evaluation process, and intended to provide preliminary data to be used for detailed assessment of strategic documents at later stages of the process.

After satisfying the formal requirements, the strategic documents (and the associated plans of activities) are subject to substantive evaluation. At this stage, the examination follows the guidelines expressed in the II section (Strategic Management under Submeasure 6: Cluster Development Strategy). At this stage, development plans are examined and the whole subsection is subject to expert evaluation. The experts concentrate on development plans for the next three years (i.e. for the duration of the formal KKK status award). The expert evaluation of strategic documents involves the examination of their feasibility, reliability, and of the aspirations expressed therein.

At this stage of the process, the procedure involves the use of the following indicators (http://www.pi.gov.pl/PARP/chapter_86197.asp?soid=6701640B52A54EE3A5BCA9CF2EADC9F6, accessed: 26.07.2015):

- Indicator 1. The quality of diagnoses. Evaluation the quality of the following: diagnosis of the current position of the cluster and its constituent entities, identification of fundamental problems and challenges, identification of key trends in the trade (in regional, national and global dimension).
- Indicator 2. Strategic objectives. Used to ascertain that the cluster under evaluation has properly defined their strategic objectives and suitable benchmarking instruments. The objectives need to be adequate to organisational needs, realistic, and capable of providing a significant increase of the economic potential, global competitiveness and innovative power of both the cluster and its constituent entities.
- Indicator 3. Feasibility of strategic objectives. Based on the evaluation of submitted documents expressing the intended approach to the realisation of strategic objectives, specifically the availability of human and material resources for their realisation, sources of financing, and the reliability and completeness of submitted plans for action.

The above indicators are measured on the scale of 0–5, with 0 representing failure to meet the criteria of evaluation, and 5 representing adequate fulfilment of the criterion in question.

A similar scale is used during the last stage of the evaluation process, i.e. the expert evaluation conducted in the form of an expert panel for the examination of the following

indicators(http://www.pi.gov.pl/PARP/chapter_86197.asp?soid=6701640B52A54EE3A-5BCA9CF2EADC9F6, accessed: 26.07.2015):

- Indicator 1. The likelihood of meeting the cluster's strategic objectives, evaluated based on responses collected from cluster representatives on perceived potential to meet the indicated benchmarks of strategy realisation. This stage of evaluation is also based on the examination of past results and the cluster's performance (such as indices of growth dynamics).
- Indicator 2. The likelihood of gaining a competitive advantage on global markets,in terms of the cluster's potential to fully exploit the benefits offered by successful incorporation of strategic plans.
- Indicator 3. Adequacy of resources reserved for the realisation of strategic objectives (human, financial, infrastructural etc.).
- Indicator 4. Impact of the adopted strategy on cluster innovation,in the context of the correlation between the indicated strategic objectives and the cluster's innovative potential.
- Indicator 5. Barriers and challenges in the realisation of strategic objectives,as perceived by the cluster in their immediate business environment, and the cluster's potential to neutralise their effects.

The above indicators are only a subset of a much broader range of criteria used in the evaluation of clusters. In the context of management, they represent a self-contained package of benchmarking instruments for a multi-dimensional examination of the postulated strategic objectives and solutions. However, an important question comes to light in this context: is it viable and realistic to perform such in-depth analyses solely for the purpose of evaluating cluster performance in a narrow subsection of management? And does this approach offer any chance of credible evaluation to begin with?

On the one hand, such a formal evaluation is the indispensable element of the competition proceedings. After all, the status of a key national cluster, as a mark of competence, should be awarded by merit.

On the other hand, one may reasonably question the relevance of applying the same set of preliminary procedures to clusters with already established strategies, which are currently monitored and benchmarked on a regular basis?What are the chances for such evaluation system to remain consistent throughout the whole duration of the programme, if some of the actors are required to formulate new or separate strategic documents for the sole purpose of meeting the formal requirements of the KKK competition?

CONCLUSIONS

The requirements formulated for clusters that apply for the status of a key national cluster are fairly steep and many cluster organisations will find them challenging, if at all possible in practice. The number of conditions to be met is truly overwhelming. This approach seems reasonable – after all, the KKK award is a mark of elite status, and the spectrum of available specialisations is quite limited, both in regional and national dimension. Consequently, the number of awards should not, and will surely be not too large. This conclusion can be corroborated by the results of the first edition of the KKK

programme, with only seven of the applying clusters recognised as fit to receive the formal status of a key national cluster. The list of awards includes (without limitation) such widely recognised Polish clusters as (http://www.pi.gov.pl/PARP/chapter_86197.asp?soid=6701640B52A54EE3A5BCA9CF2EADC9F6, accessed: 26.07.2015):

- Aviation Valley Cluster, represented by the Aviation Valley Association of Aerospace Producers;
- Interizon Cluster, represented by the Interizon Fund;
- Mazovian ICT Cluster, represented by the Association for Socio-Economic Development"Wiedza";
- West-Pomeranian Chemical Cluster "Zielona Chemia", represented by the "Zielona Chemia" Association.

In retrospection, the shift from purely quantitative to merit-based approach to cluster development policy is a step in the right direction. With strong emphasis on the quality, the KKK programme has good potential for identifying and recognising those cluster formations which offer the best value in terms of their ability to reach and maintain competitive advantage. The criteria of evaluation, expressed in formal requirements of the programme, seem suitable to provide effective identification of the most promising cluster structures which are truly deserving of the elite status of a key national cluster.

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STRATEGIA ROZWOJU KLASTRA W KONTEKŚCIE KONKURSU „KRAJOWY KLASTER KLUCZOWY"

Streszczenie. Celem artykułu jest zaprezentowanie roli jaką pełni strategia rozwoju klastra w kontekście konkursu „Krajowy klaster kluczowy" (KKK). W myśl regulaminu na status takiego podmiotu zasługują tylko nieliczne klastry, które spełnią wiele wymogów kryteriów stawianych przed nimi na drodze konkursu oraz swoją działalnością wpisują się m.in. w specjalizacje regionu. W artykule zwrócono uwagę, że w walce o to miano istotną rolę pełni także obszar zarządzania. To właśnie wspomniana w tytule strategia rozwoju klastra podlega kilkuetapowej ocenie w trakcie trwania konkursu. Pierwszy etap jej oceny stanowi poziom formalny, następny jest merytoryczny, a ostatecznym elementem tego procesu jest ocena m.in. realności jej wykonania, ocena generowana przez panel ekspertów. Ponadto

w artykule zaprezentowano zmiany w podejściu do polityki klastrowej jakie dokonały się w polskim systemie wsparcia klastrów na przestrzeni ostatnich lat. Zmiany te były konieczne, ponieważ zauważalna była coraz mocniej tendencja stawiania na ilość klastrów, a nie na ich jakość i konkurencyjność.

Słowa kluczowe: strategia, klaster, krajowy klaster kluczowy

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SUPPLY AND DEMAND IN THE PRESS MARKET IN POLAND

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Abstract. Polish press market is dominated by entities with foreign, particularly German, capital. The only major Polish publisher is Infor, which operates magazines focusing on legal and business issues. In the segment of daily newspapers there is a tendency to create oligopolistic structures with four big players dominating the market. The aim of this article is to present the current situation in the press market in Poland from the perspective of supply and demand The paper lists and characterizes the major publishers of newspapers and magazines as well as the readers' reception of their offer, that is, the demand for the offered market goods, in this case – newspapers and magazines. It also focuses on the impact of on -line publications and advertising revenue on the changes in the press market. The empirical part of the paper provides the analysis of data originating from the Central Statistical Office of Poland (GUS), the Institute of Press Circulation Control (ZKDP), Polish Readership Survey (PBC), Expert Monitor and Starlink Media House. The paper uses a descriptive research method and detailed data are presented in tabular form.

Key words: press, market, circulation, sales, readership

INTRODUCTION

The most important changes in the Polish press market followed the amendment of the Press Law Act in June 1989. Newspaper and magazine titles proliferated. Every adult Polish citizen without a criminal record could become a publisher while foreign entities required the approval of the Ministry of Foreign Affairs. Consequently, the market opened to entities with foreign capita l, the representatives of big Western publishing companies and thus many new magazine titles were created [Secler 2011]. An example would be the establishment of the company with German capital publishing "Goniec Poznański", the share of French and Italian capital in the publishing house of "Czas Krakowski" or Norwegian capital in "Dziennik Dolnośląski".

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Polish press market has also been transformed by the decision to dissolve the Workers' Publishing Cooperative – RSW, the former monopolist. Under communism this enterprise published and distributed books, newspapers and postcards. The newspaper titles previously owned by Workers' Publishing Cooperative were then largely taken over by Western publishers.

Polish initiatives to establish larger publishing houses or publishing groups were scarce. One of the few proposals was "Gazeta Wyborcza", currently the flagship newspaper belonging to Agora SA group. In 1994 a minority shareholder of Agora was the US company Cox Enterprise. Currently Agora is a publicly traded company, and its shareholders are both domestic and foreign entities.

The aim of this article is to present the current situation in the press market in Poland in the perspective of supply and demand. The paper lists and characterizes the major publishers of newspapers and magazines, as well as the readers' reception of their offer, that is, the demand for the offered market goods, in this case – newspapers and magazines. It also focuses on the impact of online publications and advertising revenue on the transformation of the press market.

The empirical part of the paper provides the analysis of data originating from the Central Statistical Office of Poland (GUS), the Institute of Press Circulation Control (ZKDP), Polish Readership Survey (PBC), Expert Monitor and Starlink Media House. The paper uses a descriptive research method and detailed data are presented in tabular form.

MAJOR PUBLISHERS OF NEWSPAPERS AND MAGAZINES

The only major Polish publishing house is Infor, which operates magazine titles focusing on legal and business issues. In the boom years about forty titles were published, and currently it is over twenty. The best-known title is "Gazeta Prawna". The publisher also operates the Internet portal infor.pl.

The Polish press market is dominated by the entities with foreign, especially German capital. The main publishing houses include Bauer, Burda International (which officially took over the publishing house Gruner und Jahr in January 2014), Edipresse Polska and Ringier Axel Springer Polska. The group of slightly smaller publishers includes Agora and Marqurard Media Polska.

The biggest player in the Polish market is the publishing house Bauer, which currently operates 39 titles and special editions, and their total annual circulation in 2014 amounted to over 302 million copies [Institute of Press Circulation Control (ZKDP) 2015]. The weekly TV magazines have the largest circulation followed by women's magazines. The Group Bauer has also acquired a well-known radio station RMF FM and is a leader in the category of advertising and sales revenue (Fig. 1).

The current trends in newspaper and magazine publishing market in Poland show a decline in circulation and falling newspaper readership. These processes mostly affect the segment of daily newspapers (Table 1).

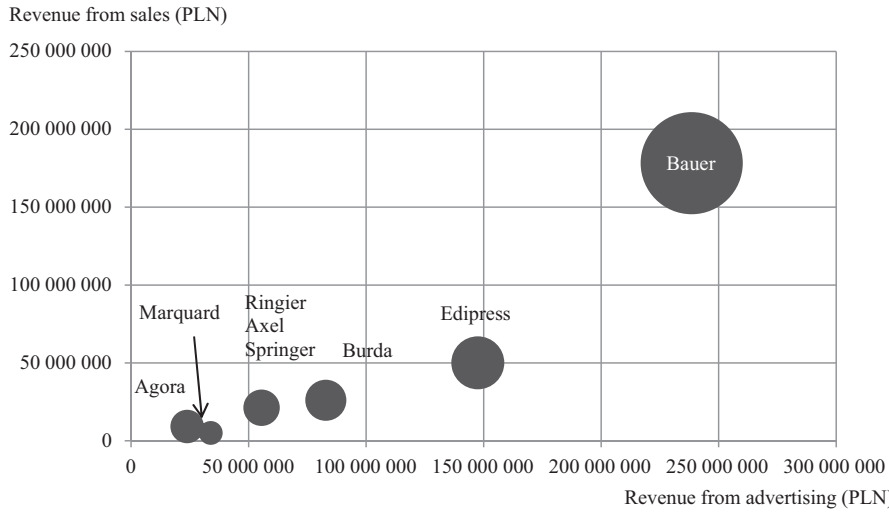

Fig. Ranking of publishers by sales and advertising revenue in January–April 2014

Source: Elaborated by Joanna Mosiejczuk on the basis data from Expert Monitor, PBC, ZKDP.

Table 1. Number and circulation of daily newspapers in years 2003–2013

Year	Number of titles	Day circulation (thousand copies)	Annual circulation (thousand copies)
2003	69	4 604.2	1 035 162.0
2004	77	8 257.3	1 602 611.2
2005	69	5 804.3	1 353 113.5
2008	58	4 605.8	1 219 851.9
2010	51	3 721.7	994 100
2012	52	3 484.0	841 100
2013	50	2 920.5	749 700

Source: Based on data from Central Statistical Office of Poland (GUS).

The growth recorded in 2004 was due to the release of new free titles and "Fakt", whose sales after a few months reached 500 thousand copies. This was due to the low cover price and the introduction of an appealing added value – competitions with attractive prizes. This marked the beginning of the price wars – new strategy applied by media executives. This process involves lowering the cover price accompanied by a promotional campaign aimed at attracting advertisers. Lower cover price is supposed to increase readership, which in turn attracts advertisers. Increased copy sales and growth in advertising revenue, as a rule, compensate for losses resulting from the

reduction in cover price [Żabiński 2012a]. Over these 10 years the number of daily newspapers declined by more than 30%, and their circulation decreased by 1.6 million copies. Data on annual circulation (number of copies distributed in a year) and day circulation (number of copies distributed on an average day) illustrate the level of supply in the Polish press market. Effective demand can only be estimated if paid circulation – the number of copies sold – is known. Such data can be obtained from the Institute of Press Circulation Control (ZKDP). In 2014 supply exceeded demand by about 32% (1.82 million copies). In the segment of daily newspapers there are tendencies to create oligopolistic market structure dominated by four big publishers: Agora, Axel Springer Polska, Orkla Press Poland Presse.

In the magazine segment of the market, the group of publications attracting the biggest number of readers are TV and radio guides. "Tele Tydzień" with a circulation of 1.2 million copies and with a circulation of about 500 thousand copies are at the top of the list of the most popular titles. The second group are women's magazines, which have a long tradition and comprise numerous titles covering diverse themes: real life, fashion, health, beauty, lifestyle and many other issues. The most popular titles are with a circulation of 750 thousand, and "Świat Kobiety" with 450 thousand copies. The leader of the category of socio-political magazines in 2014 was "Newsweek" with a circulation of 190 thousand copies [ZKDP 2014].

A considerable growth has been recorded in the number of titles published over the last dozen of years (Table 2). Thus, Polish print media market has become pluralistic due to the multiplicity and diversity of titles competing to attract the readers. This trend emerged regardless of the decline in readership of print media and the increasing advantage of electronic media. Consequently the market was fragmented which in turn caused the decline in circulation attributable to an average title.

Table 2. Number of magazine titles and their circulation of in Poland in the years 2003–2013

Year	Number of titles	Day circulation (thousand copies)	Annual circulation (thousand copies)
2000	5 468	67 820.0	1 552 000.0
2004	6 425	69 122.0	1 430 000.0
2006	6 693	77 062.8	1 621 793.9
2008	7 229	86 182.2	2 836 119.2
2009	7 423	87 353.2	2 603 477.6
2010	7 655	90 796.2	2 447 626.2
2011	7 764	91 027.8	2 367 600.5
2012	7 775	80 866.8	1 341 900.0
2013	7 355	77 048.1	1 295 600.0

Source: Based on data from Central Statistical Office of Poland (GUS).

The data on circulation compared with sales figures show a surplus of supply over demand. In 2014, according to ZKDP, 26% of the circulation (2.48 million copies) was not sold. The demand for print media may also be estimated on the basis of annual household expenditure on culture per person. In 2013 the average annual expenditure on culture per capita amounted to 359.16 PLN, including 33.36 PLN (9%) spent on newspapers and

magazines. The biggest expenditure on newspapers and magazines was recorded in households of pensioners (61.68 PLN) and the lowest in the households of farmers (16.32 PLN) and factory workers (15.24 PLN) [*Household expendidure…* 2014].

PRESS READERSHIP IN POLAND

The analyzes of readership are based on the studies conducted by Polish Readership Survey (PBC), a standard press research in Poland run by the Institute Millward Brown SMG/KRC since 1998 on behalf of a consortium of major Polish publishers, i.e. the company named Polskie Badania Czytelnictwa (Polish Readership Survey – PBC). The PBC study monitors about 160 titles of national, regional and local daily newspapers and magazines. It has a form of computer-assisted survey interviews carried out with randomly selected people in their homes. The study is carried out continuously, every day of the week throughout the year in the age group 15–75 years.

The most read national daily in 2014 was "Fakt" (Ringier Axel Springer Polska). The title was read by 12.72% of respondents and in comparison with 2013 it recorded a 1% decline. The second most popular daily newspaper was "Gazeta Wyborcza" (Agora). The ranking of mostly read daily newspapers in the years 2014–2013 is shown in Table 3.

Table 3. Readership of national daily newspapers in the period March–August 2013 and 2014 (% of respondents)

Title	March–August 2014	March–August 2013
Fakt	12.72	11.79
Gazeta Wyborcza	8.97	10.82
Super Express	4.92	5.12
Metro	3.19	4.19
Przegląd Sportowy	3.13	3.70

Source: Based on PBC study.

The most popular weekly in the studied period was "Tele Tydzień", which was read by 23.47% of respondents, a decrease of 2.5% compared to 2013. The top three weekly titles were published by Bauer. In the analyzed period the decline in readership was recorded for almost every title.

The most popular bi-weekly in this period was "Przyjaciółka", which was read by 11.75% of respondents. It recorded a decline of.96% compared to a corresponding period in the previous year when it was in second position. In turn, "Pani Domu" moved down as its readership dropped by 3.23% (Table 4).

In the second and third quarter of 2014 "Twój Styl" (Bauer) was the most read monthly magazine (10.6% of respondents), despite the decline of readers' interest compared to 2013 "Twój Styl" is followed by "Claudia" (Burda International Polska) – one of many women's real-life magazines (Table 5).

The most popular bimonthly in the period from April to September 2013–2014 was "Komputer Świat Twój Niezbędnik". It should be noted that also in this category of

Table 4. Readership of weeklies and bi-weeklies in the period May–October 2013 and 2014 (% of respondents)

Title	May–October 2014	May–October 2013
	Weeklies	
Tele Tydzień	23.47	26.09
Życie na Gorąco	14.39	17.36
Chwila dla Ciebie	11.18	14.08
Angora	9.91	12.35
Newsweek	6.62	8.86
	Be-weeklies	
Przyjaciółka	11.75	13.71
Pani Domu	10.51	13.74
Tina	9.22	12.10
Naj	8.49	11.46
Viva	7.66	9.45

Source: Based on PBC study.

Table 5. Readership of monthly and bi-monthly magazines in the period April–September 2013 and 2014 (% of respondents)

Title	April–September 2014	April–September 2013
	Monthlies	
Twój Styl	10.60	11.88
Claudia	7.37	9.26
Mój Piękny Ogród	6.66	6.47
Cztery Kąty	6.64	7.96
Skarb	6.48	2.56
	Be-monthlies	
Komputer Świat Twój Niezbędnik	1.90	2.23
Auto Świat 4x4	1.88	1.97
Sól i Pieprz	0.80	0.78
Elle Decoration	0.45	0.63

Source: Based on PBC study.

magazines a decline in readership was reported. More than half of the population most frequently read women's magazines (57%) and thematic magazines (52%). Then the Poles reach for daily newspapers (48%) and finally – socio-political weekly magazines (30%) [*Diagnosis of Readers' Behaviour*... 2015].

The falling readership and changes in the advertising market arising from the increasing role of electronic media, especially the Internet, forced the publishers to create

on-line editions of their printed magazines in 2009. Media groups operating daily newspapers or dailies and magazines achieved better results than publishers operating only magazines [Żabiński 2012b].

ON-LINE PUBLICATIONS IN THE POLISH PRESS MARKET

The emergence of new media in the 1960s also initiated the transformation of press market, mainly because of such qualities as access to individual users, reciprocal links, interactivity, openness and diversity of possible uses [Szpunar 2008]. According to L. Manovich [2006, p. 119] their basic feature "is free access to data which can be copied without any harm to quality and interactivity enabling the recipient to interact with the media objects".

Therefore the Internet is a strong threat to the publishing industry and forces technological changes in the Polish media market. Publishers are implementing IT technology in the field of pre-production and the production itself and numerous publishers have decided to go on-line.

The fastest developing online editions do not have their paper counterparts. The pursuit of specialization is likely to be met by the development of electronic publications that take into account the expectations of at least part of the public. Factors supporting these trends include a growing number of Internet users and the technological progress in the field of computer monitors, which are characterised by an increasingly better performance.

T. Kowalski [2013] argues that an important determinant of the development of online editions, which can be used by publishers to promote this form of publication, is the environmental protection. Excessive paper consumption causes protests of

Table 6. Number of electronic editions of newspapers and magazines sold in 2014

Month	Number of electronic editions of newspapers	Number of electronic editions of magazines
January	645 219	112 728
February	600 016	93 901
March	642 675	105 354
April	611 189	95 955
May	605 226	93 579
June	608 761	111 963
July	664 119	106 882
August	631 354	94 743
September	704 001	101 630
October	736 302	100 019
November	646 910	91 742
December	733 067	79 098
Total	7 828 839	1 187 594

Source: Based on data from Institute of Press Circulation Control (ZKDP).

environmentalists. Electronic media impose no quantitative restrictions on placed articles while in the case of print media there are limitations due to the size of a given newspaper or a magazine.

As Table 6 shows the number of electronic newspapers sold in the subsequent months of 2014 increased. The most read on-line newspapers included "Dziennik Gazeta Prawna", "Rzeczpospolita", "Gazeta Wyborcza" and "Fakt". However, in the category of magazines, digital editions did not sell so well – only about 1.2 million. A lot of magazines do not even have on-line editions. This segment of the media industry is still underdeveloped. Managers fear the changes related to company operations on a completely new virtual market, as well as the fact that they may fail to attract readers who will turn to another publisher offering a print edition.

THE SHARE OF EACH MEDIA CLASS IN ADVERTISING EXPENDITURE

The readership of the printed press, circulation and sales are declining but positive trends have been recorded in the segment of on-line press. One of the determinants of this trend can be the dynamics of advertising expenditure in the media (Table 7). In the period from January to September 2014 the expenditures on Internet advertising were 6.4% higher than last year, while spending on advertising in print media (newspapers and magazines) fell by 34.8%. In nominal terms, according to Starlink Media House, expenditures on online advertising were 1,602.2 million compared to 744.2 million PLN spent on advertising in print media (newspapers and magazines).

Table 7. Dynamics of advertising expenditure in the media from January to September 2014

Specification	Media						
	Internet	radio	television	outdoor	cinema	magazines	newspapers
Dynamics (%)	+6.40	+6.40	+6.30	–1.70	–9.30	–15.40	–19.40

Source: Based on data from Starlink Media House.

The share of each class of media in advertising expenditure is very diverse, though in recent years the shares of television, radio, outdoor and cinema have changed slightly. However, there was a visible transfer of advertisers from print to electronic media.

The publishers' response to the decline in advertising revenue is digitization and transfer of the content to the Internet. The case of Agora can serve as an example here: at the beginning of February 2014 the publisher limited the access to free online content on their website related to "Gazeta Wyborcza". At the press conference, the company declared that by the end of 2014 they expect to have 40 thousand subscribers to premium content, and reach 75 thousand subscribers by the end of 2016. At the beginning of 2015 years it seemed that the planned goals have been achieved, as the number of digital subscriptions amounted to 55 thousand. This result confirms that readers are willing to pay for content available on the Internet (www.agora.pl).

CONCLUSIONS

The press, similarly to television, contributes to the national culture. Both print and digital media shape and develop readers' interests, and at the same time, are regarded as the providers of most valuable content. Nowadays, almost every newspaper title has its electronic edition or is preparing for launching one. Digital editions are transforming the publishing market. Goods or services in the electronic version are replacing traditional print editions. The continuing decline in readership of print media is mainly the result of broad and free access to online content. However, it should not be assumed that printed newspapers will be withdrawn, as there will still be readers looking for content different from the one published online. Thus, the printed editions should be further improved and developed, but on a scale adequate to the currently existing demand. Especially, as over half of the Poles believe that print media provide the most valuable content, even though they do not regard it as exclusive or main source of information.

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PODAŻ I POPYT NA RYNKU PRASY W POLSCE

Streszczenie. Na polskim rynku prasowym dominującą pozycję zajmują podmioty z udziałem kapitału zagranicznego, w szczególności niemieckiego. Jedynym dużym, polskim podmiotem jest Infor, wydawca pism o tematyce prawnej i gospodarczej. W segmencie prasy codziennej występują tendencje do tworzenia struktur oligopolowych, w tym przypadku dominacja czterech podmiotów. Celem artykułu jest przedstawienie aktualnej sytuacji na rynku prasowym w Polsce w perspektywie podaży i popytu. Wymieniono i scharakteryzowano głównych wydawców prasy codziennej oraz czasopism, a także zainteresowanie czytelników ich ofertą, czyli skalę popytu na oferowane dobra rynkowe, jakimi są dzienniki i czasopisma. Podkreślono również wpływ wydawnictw on-line i wpływów reklamowych na przemiany na rynku prasy. W części empirycznej przeprowadzono analizę danych Głównego Urzędu Statystycznego (GUS), Związku Kontroli Dystrybucji Prasy (ZKDP), Polskiego Badania Czytelnictwa (PBC), a także Expert Monitora i Domu Mediowego Starlink. W artykule zastosowano metodę opisową, a szczegółowe dane przedstawiono w układzie tabelarycznym.

Słowa kluczowe: prasa, rynek, obrót, sprzedaż, czytelnictwo

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MUNICIPAL WASTE MANAGEMENT IN POLAND IN THE LIGHT OF MULTI-DIMENSIONAL COMPARATIVE ANALYSIS

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Abstract. The paper is an attempt to show the present condition of municipal waste economy in spatial aspect with respect to voivodships. The data collected for chosen diagnostic variables have been transformed by zero unitarization method and in this way made comparable. The transformed variables have been used as a basis for the construction of the synthetic variable describing each voivodship. Then, the ranking arrangement has been obtained, which shows the situation concerning spatial differentiation of the condition of municipal waste economy in Poland. The final part of the paper presents the division of voivodships into three groups – of high, average and low level of municipal waste economy.

Key words: municipal waste, voivodship, diagnostic variable, synthetic variable, ranking

INTRODUCTION

Waste management, in particular municipal waste management, is an important element of bioeconomy. Bioeconomy assumes that any projects making it possible to preserve the cleanliness of the natural environment in combination with the use of secondary raw materials and at the same time bringing economic profits fit into its sphere of operation. "Proper management in this sphere may have a great impact on the course of economic-social processes, results achieved in management and the level of the society's welfare" [Adamowicz 2014].

The creation of municipal waste involves man's non-industrial activity [Rosik-Dulewska 2000]. This waste comes in solid and liquid forms. The Polish Act on waste dated December 14, 2012 (Journal of Laws from 2013, item 21) specifies the notion of municipal waste as waste generated in households, excluding end of use vehicles, as well as waste not containing hazardous waste, coming from other producers of waste which, due

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to its nature or composition, is similar to waste coming from households. This is paper, cardboard, glass waste, textiles, biodegradable waste (related to food) as well as residues from the cleaning of households.

Rational municipal waste management aims at the popularization of waste selection at the source of their creation, namely in households, and thus at enabling the execution of recycling. The analysis of waste management was conducted on the basis of data from all voivodships in Poland in 2014 (the last available statistical information). Because the phenomenon of municipal waste management is a complex phenomenon, namely a phenomenon which may be described taking into account more than one feature [Kukuła 2000], a set of features describing this phenomenon was selected. Therefore, the multi-facet description of the complex phenomenon, namely municipal waste management in particular Polish voivodships, is possible with the use of a method related to the multi-dimensional comparative analysis.

The purpose of the article is to present the condition of municipal waste management in Polish voivodships in 2014 and to create their ranking due to the examined phenomenon. The further purpose is to distinguish three groups of voivodships:

- Group 1 – voivodships characterized by a high level of municipal waste management;
- Group 2 – voivodships with a medium level of the examined phenomenon;
- Group 3 – voivodships with a low level of the examined phenomenon.

LINEAR METHOD OF ORDERING

The key issue in creating the ranking of objects (voivodships) in terms of the level of the complex phenomenon is the correct selection of diagnostic variables describing the examined phenomenon. Two criteria were followed when selecting the variables: substantive as well as statistical. The substantive criterion includes premises determining the importance of the selected variable. The selection made on the basis of this criterion is more of a subjective nature, namely depends on the opinion of the conducted research. The second criterion is of an objective nature because it assumes the requirement of meeting a sufficient level of the variable's variability which, after meeting the requirement, may belong to the set of diagnostic variables.

It is assumed that a given phenomenon is described by a properly selected set of s diagnostic variables: $[X_1, X_2, \ldots, X_s]$. The values of these variables were recorded for r observed objects (here – voivodships): $[0_1, 0_2, \ldots, 0_r]$. Thus we have data contained in the $\boldsymbol{X}$ matrix:

$$\boldsymbol{X} = [\boldsymbol{x_{ij}}] = \begin{bmatrix} x_{11} & x_{12} & \ldots & x_{1s} \\ x_{21} & x_{22} & \ldots & x_{2S} \\ \ldots & \ldots. & \ldots & \ldots \\ x_{r1} & x_{r2} & \ldots & x_{rS} \end{bmatrix} \tag{1}$$

where: $I = 1, \ldots, r$ as well as $j = 1, \ldots, s$.

A simple measure specified as the quotient of extreme values $I(X_j)$ is suggested for testing the degree of variability of diagnostic variables:

$$I(X_j) = \frac{\max\limits_i x_{ij}}{\min\limits_i x_{ij}}, \ \min\limits_i x_{ij} > 0 \tag{2}$$

The level of variability of a given variable is considered sufficient when it meets the following inequality:

$$I(X_j) > 2 \ (j = 1, \ldots, s) \tag{3}$$

This means that the value of a given diagnostic variable in the best object (when the variable is a stimulus) needs to exceed its value in the worst object more than two times. The variables describing the shaping of complex phenomena have a diverse nature. They include variables the increased value of which should be associated with the increased level of the described phenomenon. They also include such variables the increased value of which should be assessed in negative terms. The former are stimuli, while the latter are inhibitors. This distinction was introduced for the first time by Zdzisław Hellwig in his pioneering work in 1968 [Hellwig 1968]. There is also a third type of variables known as neutral variables [Borys 1978]. This study contains only stimuli and inhibitors, neutral variables were omitted. Therefore, a Reader wishing to become familiar with the nature of a variable being a neutral variable is recommended the work by [Borys 1968].

The variables describing a complex phenomenon are usually expressed in various units and are characterized by a diverse order of magnitude. All this makes it impossible to directly use these variables to assess the complex phenomenon in a comprehensive manner. Normalization methods are used to standardize the order of magnitude of these variables as well as to deprive them of their denomination. A decision was taken to use the zero unitarization method among many methods of normalizing diagnostic features. This method is characterized by numerous features that may be classified as advantages [Kukuła 2000]. The point is to transform the original diagnostic variables into normalized variables ($X \rightarrow Z$). The advantages of the zero unitarization method include:

1. Linear quantification of diagnostic variables (stimulus, inhibitor and neutral variable).
2. The possibility to normalize features with negative, zero and positive values.
3. Each diagnostic variable after normalization accepts the value from a zero-one half-open interval. This is related to the standardization of various orders of magnitude of the original variables.
4. The existence of simple formulas converting the values of original variables into normalized values both for the stimulus, inhibitor and the neutral variable.

Normalized variables are used to create a synthetic variable, describing each object (voivodship) in a comprehensive manner. The arrangement of objects with respect to a synthetic variable (Q_i) makes it possible to create their ranking [Kukuła 2014].

Due to a different impact of the stimuli and the inhibitors on a complex phenomenon, their transformation process proceeds individually. Normalization for the stimuli (*S*) is performed with the application of the formula:

$$z_{ij} = \frac{x_{ij} - \min\limits_{i} x_{ij}}{\max\limits_{i} x_{ij} - \min\limits_{i} x_{ij}} \tag{4}$$

where: z_{ij} – normalized value of the *j* variable in the *i* object;
x_{ij} – value of the *j* diagnostic variable in the *i* object.

The following formula is used when normalizing the inhibitors (*D*):

$$\frac{\max\limits_{i} x_{ij} - x_{ij}}{\max\limits_{i} x_{ij} - \min\limits_{i} x_{ij}} \tag{5}$$

The values of normalized diagnostic variables obtained according to the formulas (4) and (5) meet the relations:

$$z_{ij} \in [0, 1] \tag{6}$$

$$z_{ij} = 0 < \Leftrightarrow I > x_{ij} = \min\limits_{i} x_{ij}, X_j \in S \tag{7}$$

as well as $z_{ij} = 1 \Leftrightarrow x_{ij} = \max\limits_{i} x_{ij}, X_{ij} \in S$ (8)

This means that the object with the worst result with regard to the *j* variable is valued with the zero number. In turn, an object showing the best result with regard to the *j* feature is valued the highest, thus its value is one. The situation for inhibitors is different:

$$z_{ij} = 0 \Leftrightarrow < I > x_{ij} = \max\limits_{i} x_{ij}, X_j \in D \tag{9}$$

as well as $z_{ij} = 1 \Leftrightarrow x_{ij} = \min\limits_{i} x_{ij}, X_j \in D$ (10)

The construction of a synthetic variable (Q_i) consists in averaging all normalized features for the *i* object:

$$Q_i = \frac{1}{s} \sum_{j=1}^{s} z_{ij} \quad (I = 1, \ldots, r) \tag{11}$$

The synthetic (aggregated) variable created in this manner also meets the relation:

$$Q_i \in [0, 1] \tag{12}$$

Due to the frequent lack of information making it possible to determine the weights for particular diagnostic variables, equal weights for all features are assumed, e.g. one. This is also the case in this research.

The synthetic variable (Q_i) characterizing the *i* object may have the value one only when the *i* object proves the best as compared to other objects within the scope of all the diagnostic variables:

$$\max_i z_{i1} = \max_i z_{i2} = ... = \max_i z_{is} = 1 \tag{13}$$

The synthetic variable for a given object (*i*) may assume the value zero only when this object proves the worst due to all diagnostic variables and the following equation takes place:

$$\min_i z_{i1} = \min_i z_{i2} = ... = \min_i z_{is} = 0 \tag{14}$$

With the ranking of r objects (here – 16 voivodships), it is reasonable to divide them into three groups: I – with a high, II – with a medium and III – with a low level of the examined complex phenomenon. The following algorithm should be used for this purpose [Kukuła 2015]:

1. Calculate the range of the synthetic variable:

   $$R(Q_i) = \max_i Q_i - \min_i Q_i$$

2. Determine the *k* value of the division parameter:

   $$k = \frac{1}{3} R(Q_i)$$

3. Determine the intervals of values of the synthetic variable for particular groups:
   - Group 1 (high level of the phenomenon): $Q_i \in (\max_i Q_i - k, \max_i Q_i]$;
   - Group 2 (medium level of the phenomenon): $Q_i \in (\max_i Q_i - 2k, \max_i Q_i - k]$;
   - Group 3 (low level of the phenomenon): $Q_i \in [\max_i Q_i - 3k, \max_i Q_i - 2k]$.

The selection of the diagnostic features was performed on the basis of two criteria: substantive as well as the sufficient level of the variables' variability. The diagnostic features were relativized. Due to the fact that the creation of municipal waste takes place in households, this event should be associated with people. Therefore, the number of people in the examined period (2014) is the point of reference for the first seven features. The only exception is the X_8 variable the intended use of which is the use in agricultural production, and thus the area of arable land in particular Polish voivodships is the point of reference in this case. This is the list of the selected variables:

X_1 – non-segregated municipal waste in kg per 1 inhabitant;

X_2 – segregated municipal waste (paper and cardboard) in kg per 1,000 inhabitants;

X_3 – segregated municipal waste (glass) in kg per 1,000 inhabitants;
X_4 – segregated municipal waste (plastic) in kg per 1,000 inhabitants;
X_5 – segregated municipal waste (metal) in kg per 10,000 inhabitants;
X_6 – segregated municipal waste (textiles) in kg per 10,000 inhabitants;
X_7 – segregated municipal waste (biodegradable) in kg per 1,000 inhabitants;
X_8 – area of arable land per 1 t of sludge from municipal waste treatment plant, used in crop cultivation.

Due to their nature, the variables X_1 as well as X_8 belong to the set of inhibitors (D), while others (X_2, …, X_7) should be classified into the set of stimuli (S).

RESEARCH RESULTS

EU regulations regarding municipal waste management impose the necessity to comply with certain principles on EU member states. One of them applies to the obligation of selective waste collection which makes it possible to conduct the recycling of waste from paper, cardboard, glass. metal as well as plastic and clothes. This issue is the subject of research. The selected eight variables should be associated with the preparation of waste for recycling. All this remains in strict association with EU recommendations regarding municipal waste management. Waste management is a complex phenomenon the assessment of which requires a multi-facet approach – therefore, eight diagnostic variables were selected. These variables vary among one another in the order of magnitude as well as the units in which they are expressed. The normalization procedure should be conducted in order to make them comparable. The normalization process of the selected diagnostic features was conducted with the use of original data contained in Table 1. Formulas (4) and (5) were used in the normalization. The normalization results are presented in Table 2. The normalized diagnostic variables make it possible to determine the values of synthetic variables [formula (11)] which constitute the aggregated assessment of the complex phenomenon, namely the condition of municipal waste management in particular Polish voivodships. The determined values of the synthetic variable contained in Table 3 are the basis for creating the ranking of Polish voivodships due to the assessment of the condition of the municipal waste management implemented in these units. The ranking of Polish voivodships based on the following criterion, namely the condition of municipal waste management in 2014, is presented in Table 4. The voivodships were also divided into three groups:

- Group 1 contains objects with a high level of municipal waste management;
- Group 2 contains objects with a medium level of municipal waste management;
- Group 3 contains objects with a low level of municipal waste management.

Group 1, characterized by a high level of municipal waste management, includes six Polish voivodships: Lubuskie, Śląskie, Podkarpackie, Opolskie, Wielkopolskie and Zachodniopomorskie. Group 2, with a medium level of municipal waste management, includes seven Polish voivodships: Kujawsko-pomorskie, Łódzkie, Pomorskie, Lubelskie, Małopolskie, Dolnośląskie and Mazowieckie. Group 3, with a low level of municipal waste management, includes only three Polish voivodships: Warmińsko-mazurskie, Świętokrzyskie and Podlaskie.

Table 1. Values of diagnostic variables describing the condition of municipal waste economy in Poland in 2014 (X_1, …, X_8)

Voivodship	$X_1 \in D$	$X_2 \in S$	$X_3 \in S$	$X_4 \in S$	$X_5 \in S$	$X_6 \in S$	$X_7 \in S$	$X_8 \in D$
Dolnośląskie	269	8.25	11.00	10.32	3.44	0	17.54	169.3
Kujawsko-pomorskie	212	3.83	11.01	6.22	4.78	9.57	21.53	158.0
Lubelskie	142	3.72	7.92	4.66	9.31	9.31	8.38	231.2
Lubuskie	252	15.68	12.74	10.78	9.80	9.80	17.64	166.2
Łódzkie	189	3.59	10.78	6.39	3.99	7.99	21.16	164.7
Małopolskie	178	4.16	12.17	8.31	5.94	8.91	9.80	419.4
Mazowieckie	216	7.12	7.50	5.06	9.37	7.50	12.00	265.0
Opolskie	205	5.00	13.99	8.99	0	9.99	22.98	83.4
Podkarpackie	145	4.23	10.80	6.58	9.39	14.09	5.17	153.6
Podlaskie	198	3.36	6.71	3.36	0	8.39	5.87	269.8
Pomorskie	245	5.65	10.86	8.69	0	8.69	19.98	119.5
Śląskie	258	7.41	12.87	12.87	8.72	10.90	26.60	179.5
Świętokrzyskie	117	6.33	6.33	11.87	0	7.92	1.58	313.2
Warmińsko-mazurskie	216	4.85	7.62	6.93	6.93	6.93	11.77	272.2
Wielkopolskie	246	8.93	14.40	10.65	2.88	8.64	13.82	126.5
Zachodniopomorskie	263	7.58	12.24	8.16	5.83	11.66	15.16	99.9
$I(X_j)$								
×	2.299	4.667	2.275	3.830	3.403*	2.033*	16.835	5.029

*As the minimum of the variables X_5 and X_6 equals zero, the computations to obtain $I(X_5)$ and $I(X_6)$ are carried out on the basis of the subsequent least values of these variables.

Source: Own calculations on the basis of the information contained in *Environment Protection 2015*, GUS Warszawa, 63–64, 199.

Table 2. Values of normalized diagnostic variables (Z_1, …, Z_8)

Voivodship	Z_1	Z_2	Z_3	Z_4	Z_5	Z_6	Z_7	Z_8
Dolnośląskie	0	0.397	0.579	0.732	0.351	0	0.638	0.744
Kujawsko-pomorskie	0.375	0.038	0.580	0.301	0.488	0.679	0.797	0.778
Lubelskie	0.836	0.029	0.197	0.137	0.950	0.661	0.272	0.560
Lubuskie	0.112	1.000	0.794	0.780	1.000	0.696	0.642	0.754
Łódzkie	0.526	0.019	0.551	0.319	0.407	0.567	0.783	0.758
Małopolskie	0.599	0.065	0.724	0.521	0.606	0.632	0.329	0
Mazowieckie	0.349	0.305	0.145	0.179	0.956	0.532	0.416	0.460
Opolskie	0.421	0.133	0.949	0.592	0	0.709	0.855	1.000
Podkarpackie	0.816	0.071	0.554	0.339	0.958	1.000	0.143	0.791
Podlaskie	0.467	0	0.047	0	0	0.595	0.171	0.445
Pomorskie	0.158	0.186	0.561	0.560	0	0.617	0.735	0.893
Śląskie	0.072	0.329	0.810	1.000	0.890	0.774	1.000	0.714
Świętokrzyskie	1.000	0.241	0	0.895	0	0.562	0	0.316
Warmińsko-mazurskie	0.349	0.121	0.160	0.275	0.707	0.492	0.407	0.438
Wielkopolskie	0.151	0.452	1.000	0.767	0.294	0.613	0.489	0.872
Zachodniopomorskie	0.039	0.343	0.732	0.505	0.595	0.828	0.543	0.951

Source: Own calculations on the basis of the information contained in Table 1.

Table 3. Values of the synthetic variable for voivodships

Voivodship	$\sum_{j=1}^{8} z_{ij}$	$Q_i = \frac{1}{8}\sum_{j=1}^{8} z_{ij}$
Dolnośląskie	3.441	0.4301
Kujawsko-pomorskie	4.036	0.5045
Lubelskie	3.642	0.4553
Lubuskie	5.778	0.7223
Łódzkie	3.930	0.4913
Małopolskie	3.476	0.4345
Mazowieckie	3.342	0.4178
Opolskie	4.659	0.5824
Podkarpackie	4.672	0.5840
Podlaskie	1.725	0.2156
Pomorskie	3.710	0.4638
Śląskie	5.589	0.6986
Świętokrzyskie	3.014	0.3768
Warmińsko-mazurskie	3.049	0.3811
Wielkopolskie	4.638	0.5798
Zachodniopomorskie	4.536	0.5670

Source: Own elaboration on the basis of the information contained in Table 2.

Table 4. Ranking arrangement of voivodships with respect to the level of municipal waste economy in Poland in 2014

Rank position	Object (voivodship)	Synthetic variable (Q_i)	Part of a group
1	Lubuskie	0.7223	Group I (six voivodships) $\overline{Q}_{II} = 0.4568$
2	Śląskie	0.6986	
3	Podkarpackie	0.5840	
4	Opolskie	0.5824	
5	Wielkopolskie	0.5798	
6	Zachodniopomorskie	0.5670	
7	Kujawsko-pomorskie	0.5045	Group II (7 voivodships) $\overline{Q}_{II} = 0.4568$
8	Łódzkie	0.4913	
9	Pomorskie	0.4638	
10	Lubelskie	0.4553	
11	Małopolskie	0.4345	
12	Dolnośląskie	0.4301	
13	Mazowieckie	0.4178	
14	Warmińsko-mazurskie	0.3811	Group III (3 voivodships) $\overline{Q}_{III} = 0.3245$
15	Świętokrzyskie	0.3768	
16	Podlaskie	0.2156	
	$I(Q) = \frac{\max_i Q_i}{\min_i Q_i}$	3.3502	

Source: Own elaboration on the basis of the information contained in Table 3.

When analysing the results contained in Table 4 (the ranking), three questions may be formulated:

- Is the quality of municipal waste management in Poland spatially diverse?
- How may the degree of these differences be assessed?
- What is the spatial layout of the Polish voivodships due to the condition of the examined phenomenon?

When responding to the first question, it should be stated that the quality of municipal waste management in particular Polish voivodships is varied. Are the differences significant? In order to answer the second question, we should use the quotient of extreme values of the synthetic variable – $I(Q_i)$. According to this measure, the Polish voivodship occupying the first position in the ranking – the Lubuskie voivodship, represents a result more than three times higher than the last Polish voivodship in the ranking – the Podlaskie voivodship. When comparing various rankings, it should be stated that the degree of diversity is moderate [$I(Q_i) \cong 3.35$]. This is the result of the work of all Polish voivodships to pursue the EU directives regarding municipal waste management.

With reference to the spatial analysis of the examined phenomenon, it is necessary to view Table 1. It is easy to note that voivodships from the first and the second group dominate in terms of quantity (13 voivodships in total). These are voivodships with a high and a medium level of waste management which form on the map of Poland a wide strip from the north to the south. The weakest voivodships in terms of the level of municipal waste management occupy the north-eastern region (the Podlaskie and the Warmińsko-mazurskie voivodships) as well as the central region (the Świętokrzyskie voivodship).

The next EU regulation applies to the slow reduction in municipal waste on landfills. Data in Table 5 shows what is the place of Poland among selected EU states in terms of

Table 5. Percentage of municipal waste in the total waste produced in chosen countries of the European Union

Countries	% of municipal waste
UE-28	30.2
Germany	0.2
Belgium	0.9
Netherlands	1.5
Denmark	1.6
Austria	4.0
Estonia	13.7
France	28.3
Great Britain	34.2
Italy	36.9
Portugal	50.5
Poland	52.9
Czech Republic	56.4
Spain	60.1
Lithuania	62.4
Hangary	64.6
Bulgaria	69.0
Slovakia	70.1
Romania	78.3
Latvia	83.0

Source: Own elaboration on the basis of the information contained in *Environment Protection 2015*, GUS, Warszawa, 489.

the percentage of municipal waste collected on landfills as compared to the overall mass of generated municipal waste. The increase in this percentage should be assessed in negative terms taking into account the welfare of the environment.

When analysing the data contained in Table 5, it may be easily seen that leading EU states in terms of economic development are significantly below 50% of the value of this percentage. Some of them, such as: Germany (0.2%), Belgium (0.9%), the Netherlands (1.5%), Denmark (1.6%) as well as Austria (4%) store only minute quantity of waste because the vast majority of waste is directly subjected to conversion, neutralization or energy recovery processes. This is favourable for the environment and connected with certain benefits. Poland has approached the barrier of 50% but has not exceeded it yet (52.9% in 2013). It may be comforting to know that Poland has the lowest percentage of municipal waste storage from among former states participants of Comecon and today's EU member states. For comparison, data from the same period was presented for: the Czech Republic (56.4%), Hungary (64.6%), Bulgaria (69%), Slovakia (70.1%) and Romania (78.3%).

CONCLUSIONS

In order to implement EU recommendations regarding municipal waste management, the spatial distribution of the degree of the development of this phenomenon in Poland should be viewed. The ranking of objects (here – voivodships) is the up-to-date picture of the condition of municipal waste management in particular Polish voivodships. Several detailed comments and remarks being the effect of the completed research may be found below.

1. The quality of municipal waste management shows certain spatial diversities.
2. The degree of the diversification of Polish voivodships with respect to the discussed complex phenomenon seems to be relatively low which indicates the value of the measure being the quotient of extreme values of the synthetic variable [$I(Q_i) \cong 3.35$].
3. Objects with a high and a medium level of municipal waste management (13) dominate in the set of 16 examined voivodships. Only three Polish voivodships belong to the weakest group. Such spatial distribution of the assessments of the quality level of waste management should be assessed as positive.
4. The first group, with the best assessments, is composed of 6 Polish voivodships forming a strip running from the north-west through the central part to the south of Poland.
5. The comparison of Poland with selected EU states in terms of the percentage of stored municipal waste as compared to its overall mass is not very favourable for Poland. Poland still stores relatively too much waste (see Table 5). The only positive aspect in these comparisons is the statement that Poland still has the lowest percentage of stored waste from among former states of the Comecon – today's EU member states, although the barrier of 50% is still being exceeded.
6. A multi-dimensional statistical analysis plays an important role – not to be underestimated, in the research on regional complex phenomena, including research related to waste management.
7. The following actions should be undertaken to improve the municipal waste management in Poland:
   - popularize and tighten the system of selective waste collection;

- reduce the mass of stored waste (reduce the percentage of stored municipal waste significantly below 50%);
- increase investment expenses related to the conversion of municipal waste (incineration plants, mechanical-biological waste conversion, composting plants, fermentation devices);
- eliminate illegal waste dumps.

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GOSPODARKA ODPADAMI KOMUNALNYMI W POLSCE W ŚWIETLE WIELOWYMIAROWEJ ANALIZY PORÓWNAWCZEJ

Streszczenie. Autor stawia przed sobą zadanie ukazania aktualnego stanu gospodarki odpadami komunalnymi w ujęciu przestrzennym województw. Zebrane dane o zmiennych diagnostycznych sprowadzono do stanu porównywalności za pomocą ich normowania metodą unitaryzacji zerowanej. Unormowane zmienne stanowią podstawę budowy zmiennej syntetycznej opisującej każde województwo. Przy użyciu tych zmiennych zbudowano ranking województw przedstawiający sytuację w zakresie przestrzennych zróżnicowań stanu gospodarki komunalnej w Polsce. W końcowej fazie badań podzielono województwa na trzy grupy o: wysokim, przeciętnym i niskim poziomie gospodarowania odpadami komunalnymi.

Słowa kluczowe: odpady komunalne, województwo, zmienna diagnostyczna, zmienna syntetyczna, ranking

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CONDITIONS UNDERLYING THE REGIONAL DIVERSITY OF THE AREA STRUCTURE OF FARMS IN POLAND

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Abstract. The aim of this study has been to identify the conditions underlying the regional diversity in the area structure of farms in Poland. There are many causes of such diversity, including historical reasons, the state transformation (understood as an institutional change), availability of farmland previously owned by state farms in each of the Polish provinces, integration with the European Union (agricultural policy, also as part of the CAP), and the multifunctional use of farmland (as a production factor, a wildlife asset, a cultural and symbolic value of the landscape). In 2014, a more 30% of agricultural land in Poland was in larger farms (over 50 ha in size). However, the number of such farms is growing, which is a positive development. In the context of the amended Act on shaping the agricultural system, it can be predicted that changes in the area structure of farms will proceed towards improvement, especially by land lease agreements.

Key words: farm, area structure, farmland turnover, farmland lease, Agricultural Property Agency, Agricultural Property Stock of the State Treasury

INTRODUCTION

Most of Poland's territory and a large percentage of her population are connected with agriculture. One of the key elements affecting the dynamics of positive changes in agriculture is the shape of the agrarian structure [Kukuła 2010]. In turn, a key element within the agrarian structure[1] is the area structure of farms [Marks-Bielska and Babuchowska 2012], as the size of a farm is the major factor that determines its production potential.

[1] Many authors equate the concept of an agrarian structure with the area structure. However, the author of this paper believes this is gross simplification because the area structure is a narrower term than the agrarian structure. This question was raised in the paper Marks-Bielska and Babuchowska [2012], in which the following definitions were reviewed and revised: agrarian structure, area structure and – the broadest one – agricultural system.

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The size of a farm entails certain economic considerations for the farmer. These include: the level of production and revenues, labour efficiency, opportunity to implement modern production techniques and technologies, intensity of farm management, organization of production etc. The size of farms and consequently the area structure are shaped under the influence farmland turnover[2].

For agriculture to attain its economic and production goals, what matters it is not just the volume of farmland resources owned by individual farmers but, even more importantly, how the available farmland is allocated within the structure of farms. It is crucial to build the right links between land resources and other production factors (capital and labour) [Majchrzak 2015].

One possible obstacle to the concentration of farmland is the exclusion of land from agricultural use. This is a global trend arising above all from the economic development. Poland's accession to the EU has accelerated the loss of farmland resources [Wilkin 2014], for instance due to the growth of infrastructure. This trend is also attributed to the urban sprawl over rural areas surrounding large cities [Milczarek-Andrzejewska and Zawalińska 2015].

Polish agriculture is characterized by regional diversity, manifesting itself especially as differences in the acreage between farms. The Polish farmland market is composed of two segments: private market and state market (the Agricultural Property Stock of the State Treasury, which is managed by the Agricultural Property Agency[3]). The two markets merge with each other. In particular, the Agricultural Property Agency is granted increasingly more rights to intervene in the private market of agricultural land.

The purpose of this study has been to identify differences in the area structure of farms between Polish provinces, to point up changes occurring with time and to determine the underlying causes of such changes.

MATERIAL AND METHODS

The source material were statistical data from the Central Statistical Office of Poland (GUS), especially the ones from agricultural censuses, reports of the Agricultural Property Agency, the report of the Institute of Agricultural and Food Economics – the National Research Institute titled *The agricultural land market in Poland – the current situation and outlook*, and several legal regulations (e.g. Act on the management of Agricultural Properties Stock of the State Treasury, Act on the formation of agricultural system). The basic range of temporal analysis took years 1996–2010 (agricultural census data). In order to more fully outline the situation also refer to the earlier period (before the political

[2] Turnover of agricultural land – change of the subjects who use the land, regardless of a change in the ownership of the land. It comprises all transfers of land between farms and sectors in agriculture, with the help of such forms as: transfer to the successor, sale, lease, donation, inheritance [Marks-Bielska 2010].

[3] The Agricultural Property Agency (the Polish acronym ANR) is a state legal person, a trust institution to which the State Treasury delegated the execution of the ownership right and other rights in rem. The ANR acts on the basis of the Act on the Management of the Agricultural Property Stock of the State Treasury and the Act on the Formation of Agricultural System.

transformation) is shown a historical conditions changes in the structure of farms. Uses available data characterizing the current situation on the market state. To solve the identified research problem, a monographic method was employed, in which the problem of the agricultural land market in Poland was described. Within the chosen research method, a research technique was applied which allowed the author to review documents, literature and statistical information so as to collate descriptive as well as quantitative information about the analyzed subject. The research paper also contains tables with descriptions as well as graphic presentations of the data.

FACTORS SHAPING THE AREA STRUCTURE OF FARMS IN POLAND

There are many causes of the regional diversity between farms in Poland regarding their area structure. The following can be mentioned: historical reasons[4], the state transformation (considered to be an institutional change) [Milczarek 2002, Marks-Bielska 2010], integration with the European Union (the agricultural policy in Poland conducted as part of the CAP), and the multi-functional use of agricultural land (a production means, a wildlife asset, cultural and symbolic values) [Marks-Bielska 2010].

The area structure of Polish farms is shaped under the influence of transformations concerning the ownership rights to the land previously managed by state farms. Apart from other conditions (historical, natural), quite big differences in the acreage of state-owned farmland in the past between individual regions of Poland explains the existing regional differences in the acreage of farms. Thus, the largest farms are found in the northern and westerns parts of Poland, where most of state-owned farms used to be situated.

The data gathered during the last *General Agricultural Census* [2010] show that the average size of an individual farm in Poland increased from 6.59 to 7.93 ha, i.e. by 1.34 ha. There is a tendency to enlarge farms, mostly by land purchase or lease. Meanwhi-

[4] Three different economic systems developed over the partitioned Polish territories, based on the models of each partitioning empire. The emancipation from serfdom which took place in the Prussian partition in the early 19th century resulted in the formation of a strong group of large farms and a numerous group of small farms. Medium-size farms became less numerous. The situation developed differently in the Austrian partition, where the emancipation from serfdom petrified the existing fragmentation into small farms. In the Russian partition, emancipation from serfdom without redemption payments and not "sharing" between landless peasants meant that the share of medium-size farms (as well as the ones holding 10–20 ha of land) increased. The inheritance law prohibited division of farms into smaller ones than 3.36 ha. The independent Polish state proclaimed in 1918 was composed of three parts, each with a different agrarian structure. Relatively small changes were instituted during the interwar years. The agricultural reform put into force in 1944 partitioned nearly 200 thousand ha of manorial farmland in the western and northern territories incorporated to Poland after WW2. Thus, in the regions of Lower Silesia, north-western Pomerania as well as Warmia and Mazury, large estates formerly owned by German landowners were converted to state-owned farms. The flow of land to the state sector was one of the events which caused differences between regions in Poland following WW2. Individual farmers most rapidly lost their farmland in northern Poland and in some parts of Wielkopolska; in southern and central Poland the share of the private sector has always been high (about 90%) and has hardly changed. More: Bożek and Bogocz [2012, pp. 23–25].

le, the regional diversity in the area structure of farms in Poland continues to exist. Many smaller farms are found mostly in the south-eastern provinces of Poland, while larger farms are situated in the northern part of the country. According to the Census of 2010, the smallest farms were in the following provinces: Małopolskie (3 ha), Podkarpackie (3.23 ha), Śląskie (3.37 ha) and Świętokrzyskie (4.59 ha). The biggest average size of a farm was determined in the provinces: Zachodniopomorskie (22.58 ha), Warmińsko-mazurskie (18.74 ha), Pomorskie (15.77 ha) and Kujawsko-pomorskie (14.33 ha) [Marks-Bielska and Babuchowska 2012].

The early years of the state transformation in Poland, despite the liberalization of land turnover, did not accelerate the improvement in the farms' area structure. There were several reasons, but according to Szemberg [2011], the following were crucial ones: the continuing recession in agriculture, a crisis on the labour market, changes in the agricultural market (limited demand, high quality expectations, problems selling excess production outputs, completion of food exports), which made farmers feel uncertain about the prospective development of their farms. Two contradictory trends appeared within the agrarian transformations – towards fragmentation and towards concentration. The trend towards concentration was stronger but the creation of new, small farms weakened the effects of land concentration. Some farmers divided their farmland, others donated some to family members who had lost sources of income. Farmland, even a small share of it, had to provide users with at least the minimum of existence. Consequently, in 1988–1996, the share of farms sized from 1 to 2 ha increased by 14% (56 thousand), while about 126 thousand farms (6%) were dissolved. The number of farms holding between 2 and 15 ha of farmland decreased, while the number of farms with more than 15 ha of land increased (by 44 thousand, i.e. 34%). This, however, translated into a small increase in their share, from 6 to 8.5%, and had an almost negligible effect on the structural system of farms. In the whole system of individual farming, an increase in the acreage of a farm was incomparably small and equaled just 0.8 ha (from 6.2 to 7 ha).

The results of changes in the area structure of farms were different in the macroregions distinguished by Szemberg [2001], which represent different agrarian structure types (Table 1).

Most farms, 36% (a rise by 2.2% between 1996 and 2010), were found in the central-eastern macroregion. These farms comprised 28.8% of agricultural land (4% more than in 1996), which proves that the area structure in this macroregion had deteriorated. The southern macroregion also experienced a decrease in the number of farms (by 3.1%) and in the share of the total area of agricultural land (by 2.5%). The north-western macroregion presented an 1% increase in the number of farms and a 6% increase in the share of agricultural land between 1996 and 2010, which demonstrates an improvement in the area structure in this macroregion.

According to Poczta and Siemiński [2008], the biggest disadvantage of the area structure in the Polish agriculture is that the majority of agricultural land resources is still held by small and very small farms. Maśniak [2007] underlines that because of the strong fragmentation of farms in Poland, some concentration of agricultural land could distinctly affect the scale of production and improve the economic position of agricultural producers.

Table 1. Share of farms and agricultural land in macroregions

Macroregion Type of structure	Provinces included in a given macroregion	% of farms		% of agricultural land	
		1996	2010	1996	2010
Central-western medium-size farm structure	Mazowieckie, Łódzkie, Lubelskie	33.8	36.0	32.3	28.8
Southern / small-size farm structure	Opolskie, Śląskie, Świętokrzyskie, Małopolskie, Podkarpackie	36.2	33.1	20.4	17.9
North-western / structure with the dominance of large farms	Dolnośląskie, Lubuskie, Wielkopolskie, Kujawsko-pomorskie, Zachodniopomorskie, Pomorskie, Warmińsko-mazurskie, Podlaskie	30.0	31.0	47.3	53.3

Source: Marks-Bielska [2010] after Szemberg [2001].

The data in Table 2 reveal the process through which the smallest farms (1–2 ha) were strengthened in 1990–2005. In 2008, the share of this group of farms to the total number of farms with more than 1 ha in area decreased by 1.4%. The decreasing tendency in this area group of farms continued. In 2010, it reached 21.9% in the number of farms. Until 2008, the number of farms within the 2–5 ha and 5–10 ha area groups had increased, but afterwards it remained on nearly the same level until 2010. Over the whole time period analyzed (1990–2010), there was a distinct increase in the share of the largest farms (15 ha and over), both in their number (from 6.1 to 12.6%) and the concentration of agricultural land (% share of agricultural land in 1990 was 20.2 but rose to 57.1% in 2010). The rise in the average agricultural land acreage occurred in larger farms (over 15 ha), from 20.9 ha in 1990 to 62.3 ha in 2010. Small changes appeared in the group of farms holding 1–15 ha of farmland between 1995–2010, while the biggest ones took place in the group of farms with 2–5 ha of farmland; the average area of agricultural land in that group of farms in 1990 was 3.3 ha, compared to 3.5 ha in 2010, while in the 10–15 ha group it changed from 12 ha in 2005 to 12.1 ha in 2010. These farms are a potential land supply market.

The Lorenz concentration coefficient (K_L)[5] is measure which helps to present synthetically the nature of changes in the use of agricultural land. This indicator takes into account the division of agricultural land between farms of different sizes. It describes the process of changes in the use of farmland more precisely than the average acreage of a farm [Maśniak 2007].

[5] It is calculated according to the formula [Ostasiewicz et al. 1999]: $K_L = 1 - \frac{1}{5,000} \cdot \sum_{i=l}^{k} \frac{u_{ski} + u_{ski-1}}{2} \cdot g_i$, where: u_{ski} – cummulated percentage of area of agricultural land in the area group of farms, g_i – percentage of the number of farms in area groups of farms. The value of the index K_L is within the interval of $0 < K_L > 1$. It assumes the value 0, when there is no concentration (each farm has the same area of agricultural land) and 1 at total concentration (one farm has all the agricultural land available) [Maśniak 2007].

Table 2. Individual farms with an area of over 1 ha of agricultural land, divided between area groups of farms

Years	Total	Of the area of arable land (ha)				
		1–2	2–5	5–10	10–15	15 and over
		% share of farms				
1990	100.0	17.7	35.1	29.8	11.3	6.1
1995	100.0	21.0	33.7	26.6	10.7	8.0
2000	100.0	23.8	32.6	23.8	9.9	9.9
2005	100.0	25.1	32.8	21.8	9.4	10.9
2008	100.0	23.7	33.4	22.8	9.1	11.0
2010	100.0	21.9	33.3	22.5	9.7	12.6
		% share of agricultural land				
1990	100.0	4.2	18.7	34.5	22.4	20.2
1995	100.0	4.7	17.1	28.1	19.1	31.0
2000	100.0	4.8	14.7	23.6	16.6	40.3
2005	100.0	4.7	13.9	20.3	14.9	46.2
2008	100.0	4.4	13.9	20.6	14.1	47.0
2010	100.0	3.3	11.1	16.4	12.1	57.1
		Average area of agricultural land per farm (ha)				
1990	6.3	1.5	3.3	7.2	12.4	20.9
1995	6.7	1.4	3.3	7.1	12.1	26.9
2000	7.2	1.4	3.2	7.1	12.1	29.3
2005	7.6	1.4	3.2	7.1	12.1	32.4
2008	7.8	1.4	3.2	7.1	12.1	33.6
2010	9.8	1.5	3.5	7.1	12.1	62.3

Source: The author, based on Maśniak [2007], *Agriculture in 2008* [2009] and data of the Central Statistical Office of Poland (GUS).

The data comprised in Table 3 show that there was an increase in the concentration of agricultural land in privately-owned, individual farms in all Polish provinces between 1996 and 2002. In whole Poland, the concentration coefficient rose by 0.088. Between the years 2002 and 2007, no tendency towards farmland concentration was detected. The analyzed coefficient practically remained the same. In 2010, relative to 2002, an increase in the land concentration coefficient was observed (0.058 for the whole country). The underlying reason was the higher concentration of agricultural land in all Polish provinces.

The relatively weak concentration of farmland in the analyzed time period may have been caused by the implementation of instruments of the Common Agricultural Policy, which do not support farmland concentration. These instruments include direct payments, structural pensions, or actions taken to create new farms by young farmers. Sometimes, owners of small businesses, often run single-handedly, purchase some farmland to be able to pay lower contributions to the Farmers' Social Insurance Fund (KRUS) instead of the general Social Insurance Fund (ZUS), thereby lowering the costs of operating their companies. One of the conditions to become a farmer in the sense of being eligible to pay social contributions to KRUS is to own no less than 1 equivalent ha of agricultural land.

Table 3. The agricultural land concentration coefficient in private individual farms with an acreage of more than 1 ha, in Polish provinces, from 1996 to 2010

Specification	1996	2002	2007	2010
Dolnośląskie	0.597	0.652	0.639	0.710
Kujawsko-pomorskie	0.461	0.532	0.530	0.588
Lubelskie	0.386	0.428	0.468	0.494
Lubuskie	0.634	0.689	0.663	0.744
Łódzkie	0.372	0.435	0.442	0.457
Małopolskie	0.338	0.369	0.378	0.446
Mazowieckie	0.401	0.473	0.473	0.496
Opolskie	0.531	0.617	0.629	0.705
Podkarpackie	0.365	0.387	0.408	0.508
Podlaskie	0.047	0.452	0.460	0.476
Pomorskie	0.553	0.617	0.588	0.672
Śląskie	0.363	0.494	0.393	0.589
Świętokrzyskie	0.349	0.399	0.402	0.436
Warmińsko-mazurskie	0.503	0.605	0.590	0.650
Wielkopolskie	0.430	0.548	0.541	0.615
Zachodniopomorskie	0.664	0.705	0.665	0.740
Poland	0.437	0.525	0.517	0.583

Source: the author, *Agrarian Transformations 2002* [2003], *Statistical Yearbook of Agriculture and Rural Areas 2008* [2009] and data of the Main Statistical Office (GUS) in Poland.

Entrepreneurs most often bought the required minimum amount of agricultural land to create a farm.

According to Zegar [2009], one can expect a more rapid elimination of less efficient farms among the ones that now produce agricultural products for the market, which can occur irrespective of the CAP instruments which deaccelerate it. The decisive factors in this regard are macroeconomic conditions.

As highlighted Zegar [2003], the transfer of farmland between farms is the most significant issue regarding transformations in the area structure of agricultural land. The rate of these transformations will depend on the demand and supply of agricultural land and on the agricultural policy in this scope.

The structure of farming inherited after the previous state systems in Poland is characterized by excessive fragmentation of farms. In 1989, barely 25% of farmland belonged to larger in area, collective farms. Subsequently, mainly based on these farms, large-scale private farms were established. Most of the farmland, however, is still owned and used by small farmers. In Poland, just 30% of agricultural land is found in larger farms (over 50 ha in area), while in many other EU countries this percentage is as high as 80–90% [Wilkin 2016].

As demonstrated by Baer-Nawrocka and Poczta [2016], significant changes took place between 2002 and 2014 in the area structure of farms in Poland. They include: a decrease in the number of farms (over 1 ha of agricultural land) by 29.3% (by 57 thousand farms), reduction of the number of farms possessing 1–2 ha of agricultural land, a large

decline in the number of farms (by over 27%) within the ranges of 2–5 and 5–10 ha of agricultural land, which in 2014 used 2.1% of agricultural land compared to 35% in 2002, and the smallest loss of farms in the group possessing 20–30 ha of agricultural land, as well as an increase in the number of farms having over 30 ha of agricultural land (the highest increase in absolute terms was noted in the group of farms having 50–100 ha of agricultural land, where the area of farmland used by these farms grew by 76%, i.e. by 631 thousand ha), a decrease in the area of farmed agricultural land in the group of the largest farms (over 100 ha of agricultural land) by 427 thousand ha (i.e. by 12.2% between 2002 and 2014). The share of the largest farms (over 100 ha of agricultural land) in the total farmland in Poland remained unchanged, i.e. approximately 21%.

The turnover of land is regulated by law. By the force of the latest amendment to the Act on the Formation of agricultural system, which entered into force on 30 April 2016, the state's intervention in the agricultural land market in Poland is stronger. The changes made by the amendment regard such issues as: suspending any sale of farmland from the Agricultural Property Stock of the State Treasury for five years since the above amended act came into effect, preference given to lease as a form of use of agricultural land owned by the State Treasury, sustained right of pre-emption guaranteed to the Agricultural Property Agency, both on the private market (individual farmers) and on the equity market of commercial law partnerships which own agricultural properties (the right of pre-emption can also be exercised by a lease who is an individual farmer) and, in order to prevent speculative purchase of land, a legal prohibition was passed stating that an agricultural property cannot be sold or given to another subject without a court permission for 10 years since its purchase (excluding the Agricultural Property Agency and local government units), while the land buyers can only be individual, private farmers[6].

The provisions of the amended Act on the formation of agricultural system have led to a situation where the principal way of managing state farmland is by leasing it. Most popular are long-term lease contracts, for over 10 years, which should enable rational planning of agricultural production. Land parcels shall be leased by tender bids organized by the Agricultural Property Agency. The bidding sessions can be entered only by individual farmers who want to enlarge or to create family-run farms (i.e. up to 300 ha of acreage).

The Agricultural Property Agency can allocate over 100 thousand ha of agricultural land for lease, most of it in the following provinces: Zachodniopomorskie, Warmińsko-mazurskie, Dolnośląskie and Lubuskie. Currently, it leases over 1 million ha, i.e. 73% of the total acreage of agricultural land comprised in the State Treasury Agricultural Property Stock[7].

The author believes that the policy conducted in Poland with regard to land lease as an institution is incoherent and ambiguous. It is difficult to foresee whether this form of

[6] An individual farmer – a natural person who is the owner, perpetual usufructuary, sole owner or leaseholder of agricultural properties with qualifications in agriculture, who has personally been running a farm of an area of no more than 300 ha (a family farm) for at least five years living in the village, in an area which is situated one of the agricultural property belonging to the farm, and leading through this period personally to the farm.

[7] http://gospodarstwopolska.pl/?gclid=CNfbpKqeu80CFQsNcwodE3QOiA (accessed: 07.07.2016).

land management will be supported by the Polish government, or if it is only a transient form of land use, which will lead to a complete transformation of the land ownership rights (land purchase). The intentions and provisions of the amended Act on Shaping the Agricultural System (e.g. discontinuation of the sale of land from the State Treasury Agricultural Property Stock) seem to suggest that land lease will continue to gain importance in the Polish agriculture. On the other hand, by the force of the Act on the management Agricultural Property Stock of the State Treasury amended in 2011, about 30% of the agricultural properties with an area of over 429 ha have been gradually excluded from lease agreements. Moreover, the Polish agricultural law lacks a separate act that would regulate the issue of agricultural land lease. The expected revenues to the state budget have forced the Agricultural Property Agency to sell more and more hectares of farmland.

Beside market transactions, the ownership right to land can be transferred to another subject through a non-market contract (between family members). The most common examples are when agricultural properties change hands be being donated, inherited or transferred by annuity agreements etc. In contrast to market turnover, which contributes to a more rational form of agricultural structures, the land turnover between family members preserves the existing situation. However, data from the relevant notary records prove that for the past few years such agreements done between family members have had a lesser importance in the overall transformations of land ownership and use in Polish agriculture. Among the forms of non-market land turnover, the dominant one is by donation, which corresponds to about l' of all contracts done outside the market [Sikorska 2015].

The supply of farmland in Poland, due to the substantial cultural and symbolic values assigned to it in our country and therefore the unwillingness of Polish individual farmers to sell their land, has been mostly composed of the farmland which belongs to the State Treasury Agricultural Property Stock since the onset of the transformation of the Polish agriculture. As of 31 December 2014, the APA had sold 2,608.5 thousand of ha of land (i.e. 55% of the total acreage of farmland incorporated by the State Treasury Agricultural Stock). Most of the land was sold in the provinces: Warmińsko-mazurskie and Zachodniopomorskie, which is where most of farmland had been taken over from dissolved state farms.

The current policy regarding the turnover of agricultural real estate properties as well as the diminishing acreage of farmland remaining in the State Treasury Agricultural Property Stock and managed by the APA seem to suggest that transactions on the private market are going to gain importance. The supply party on this market will be composed of both farmers who have farmed land for generations and investors who have purchased farmland so as to gain measurable profits from its sale. Land prices have been rising dynamically over the last few years and no other investment could ensure such a high capital return as the investment into land. It seems to be a realistic prediction that the number of lease agreements as well as the acreage of leased farmland in the private market will increase. The author's earlier study [Marks-Bielska 2010] shows that lease contracts are very common in Poland, but they are often informal and there are no statistical data illustrating this subject. The acreage of land actually farmed by particular farmers (including informal lease agreements) is much higher than the declared one (statistically verified).

CONCLUSIONS

The number of the largest farms, with more than 50 ha of farmland, has been growing steadily in Poland. Most of such big farms are in the northern and western provinces of the country. It is also in those parts of Poland that the desirable changes in the area structure of farms occur most rapidly. This results from the past situation in the north and west of Poland, where there were many state-owned farms, which typically covered large areas. The slowest rate of transformation in the area structure of farms is noted in south--eastern Poland, where very small farms are prevalent and the number of big farms is negligibly small. This regional diversity in Polish agriculture seems to persist as it is rooted in distant past, when Poland had been partitioned by three neighbouring empires.

In 2014, just 30% of agricultural land in Poland was in farms larger in size (over 50 ha), while in many other EU countries with a similar structure of production assortment (mostly western and northern EU members), this percentage is as high as 80–90%.

The following factors have a decisive influence on the area structure of farms in Poland: availability of farmland (acreage of farmland available to farmers), historical conditions, the state transformation, integration with the European Union, multi-functional use of agricultural land the agricultural policy conducted in the area of rational management of agricultural land. In the context of the provisions of the amended Act on the formation of agricultural system, it can be expected that transformations of the area structure of Polish farms will proceed towards its improvement, especially with the help of land lease agreements, but for this expectation to come true it is necessary to give actual support to lease as a form of land management, for instance in the implemented agricultural policy. It seems reasonable to prepare, pass and implement an Act on agricultural lease, which would protect the rights of both leases and land owners. Lease as a form of land management has proven to function well in many countries, especially in Western Europe, but also in our southern neighbours, and given an adequate policy it has a good chance to develop in Poland and thereby to contribute to a better area structure of Polish farms.

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UWARUNKOWANIA ZRÓŻNICOWANIA TERYTORIALNEGO STRUKTURY OBSZAROWEJ GOSPODARSTW ROLNYCH W POLSCE

Streszczenie. W pracy podjęto próbę określenia uwarunkowań zróżnicowania regionalnego struktury obszarowej gospodarstw rolnych w Polsce. Przyczyn tego zróżnicowania jest wiele. Można do nich zaliczyć m.in: uwarunkowania historyczne, transformację ustrojową (traktowaną jako zmiana instytucjonalna) i dostępność popegeerowskich gruntów w poszczególnych województwach, integrację z Unią Europejską (prowadzona polityka rolna, m.in. w ramach wspólnej polityki rolnej), wielofunkcyjność ziemi rolnej (czynnik produkcji, dobro przyrodnicze, wartość kulturowa i symboliczna). W Polsce w 2014 roku tylko 30% użytków rolnych znajdowało się w gospodarstwach obszarowo większych (powyżej 50 ha). Pozytywny jest fakt, że rośnie liczba tego typu gospodarstw. W kontekście zapisów znowelizowanej ustawy o kształtowaniu ustroju rolnego przewidywać można, że przemiany struktury obszarowej będą zmierzały w kierunku jej poprawy, szczególnie na bazie dzierżawy.

Słowa kluczowe: gospodarstwo rolne, struktura obszarowa, obrót ziemią rolniczą, dzierżawa rolnicza, Agencja Nieruchomości Rolnych, Zasób Własności Rolnej Skarbu Państwa

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BRANDING AND REBRANDING – GROCERY MARKET PERSPECTIVE

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Abstract. The paper presents problems of branding and rebranding as strategies of brand image creation. The study focused on grocery market as an example. The article aims to analyze branding activities of the grocery market and to identify trends, as well as the reasons for rebranding actions and tactics. Brands host many qualities, some of them spiritual (i.e. values, mission) or virtual (i.e. logo). A change of image is one of the ways to regain or keep competitive advantage. Effective rebranding activities – those positively influencing brand image – must distinguish a brand from competition, increase brand awareness and be conform to company mission and strategy. The article is based on studies of national and foreign literature, as well as on results of authors' own primary studies (questionnaire and focus group interview).

Key words: branding, rebranding, brand image, brand identity, grocery market

INTRODUCTION

The everyday complexity for firms in an international environment is that marketers struggle with branding and the establishment of brands. Various questions are raised within this area, regarding building brands in the most effective way? [Keller 2003].

"Brand" can be defined as the name, design (shapes, colours, sounds etc.), logo, symbol, or any other characteristics or attributes that distinguish one company's product or service from those of other companies [Ghodeswar 2008]. Brands are composed of intangible elements related to their specific promise, personality, and positioning and tangible components with identifiable representation including logos, Figureics, colours and sounds. A brand creates perceived value for consumers through its personality in a way that makes it stand out from other similar products. Its story is intricately intertwined with the public's perception and consistently provides consumers with a sense of security, of knowing

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what they're paying for. In a world where every individual is also a media entity, your consumers own your brand (as it always was) [Cohen 2011]. In common understanding, brands are symbolic, shorthand marketing messages creating emotional bonds with trades and, in a context of competitors comparison, an emblem to print in customers' memory.

Still, there are few studies concerning branding on grocery market. Some studies focus on use of foreign language in branding. For example, F. Leclerc, B.H. Schmitt and L. Dubė had investigated how French and English brands names affect consumer evaluation of brands and products. The authors used brand names that can be pronounced in either French or English. They found that when the name was pronounced in French rather than English, attitudes toward the brand were significantly more positive for hedonic products. For utilitarian and so called hybrid products brand attitude did not differ with pronunciation [Leclerc et al. 1994].

Most authors focus their attention on multiple roles of branding in international marketing [Leclerc et al. 1994, Wong and Merrilees 2007, De Mooij and Hofstede 2010], on the role of particular branding elements, like the role of a salesperson in branding process, brand loyalty creation, and Business-to-Business branding [Lynch and de Chernatony 2007, Chernatony et al. 2011], or on branding performance, communication and corporate branding [Harris and de Chernatony 2001, Rubinstein 2002, Knox and Bickerton 2003, Balmer and Greyser 2009]. There are also studies on non-profit branding [Stride 2006, Daw et al. 2011] and branding in different sectors, such as: place (city and region) branding [Kavaratzis 2004, Van Ham 2008, Govers 2009, Łuczak 2011], fashion and luxury goods branding [Okonkowo et al. 2007].

As L. de Chernatony, M. McDoald and E. Wallace pointed out, powerful branding theories are not just well grounded, but are also easily applied in a variety of situations [Chernatony et al. 2011]. Effective branding may lead to improved customer loyalty, larger number of orders, better sale volume, and higher revenue and profits. There are diverse branding strategies, including company names, individual branding, attitude branding, private labels and social media brands. Increasing brand awareness is vital to the survival and success of most businesses [Schuliang and Jin Zeng 2014]. A brand can be seen as a promise of a package of attributes, which a person buys and which leads to satisfaction. The attributes which create a brand can be illusory or real, emotional or rational, invisible and tangible [Ambler and Styles 1996]. Being understood as major parts of all brands, changing these would be considered as a vital event.

Referring to the PMR report *Grocery retail in Poland 2012. Market analysis and development forecasts for 2013–2015* in December 2012, the grocery market in Poland reached the value of over 230 billion PLN (54.9 billion EUR), 2.5% more than previous year (in methodology, the value of the grocery market covers the value of all products sold in grocery stores, including non-food range, as well as food items purchased through other distribution channels). According to PMR's initial estimates for 2012, there are already nearly 80 discount stores per one million Poles, their share reaching 17%. Over the last five years their number has surged by almost 80%, to nearly 3 thousand outlets, with their market share doubling in the same period. In the medium term the discount segment will remain the market leader as regards the growth rate. Forecasts indicate that in three years there will be about 4 thousand discount stores in Poland, or over 100 per one million Poles, and by then they might account for already nearly a quarter of the grocery market.

The grocery retail sector in Poland is changing as a result of economic and demoFigureic factors, trends and an ever-increasing number of influences. Grocery producers, processors and distributors, as well as companies that support the retail industry with products, services and technology are interested in the prognosis for Poland's economic recovery and expansion and the results that recovery will produce for grocery retail chains, franchises and other retailers [Wood 2013].The market's rapid evolution, as well as its value justify, therefore, studies of the rebranding process.

BRANDING AND REBRANDING

Product branding focuses on individual product's identity and value [Ghodeswar 2008]. Researchers and practitioners both realized that brands, same as humans, have specific personalities which might make them different in customer minds [Roustasekehravani and Hamid 2014]. Most firms attempt to measure satisfaction and loyalty for their brand, because customer loyalty is a vital indicator whether a product is successful or not. However, they do not think about vital factors that build satisfaction and loyalty. A major problem with this kind of effort is that measuring satisfaction and loyalty does not show how to build it. One of essential strategies to build satisfaction and loyalty in branding strategy is brand personality [Roustasekehravani and Hamid 2014].

There are many theories about the way consumers buy brands, and debate still continues about their respective strengths and weaknesses. For example, some argue that brand choice can be explained by what is known as the expectancy-value model. In this model, it is argued that consumers intuitively assign scores to two variables, one being the degree to which they expect a pleasurable outcome, the other being the value they ascribe to a favourable outcome. When faced with competing brands, this model postulates that consumers assign scores to these expectancy-value parameters and, following an informal mental calculation, make a selection based on the highest overall score [Chernatony et al. 2011]. As P. Doyle pointed out, having a successful brand will result in a bigger market share and more profitability [Doyle 1989]. Brands need to evolve and adapt to dynamic competition, consumer expectations, and environmental changes. Marketing efforts and advertising campaigns should be made by companies to build positive perceptions for their corporate and product brands and thus to achieve better sales and profit margins than competitors [Schuliang and Jin Zeng 2014].

Brand awareness and recognisability is related to the consumers' ability to confirm they have had contact with a brand before upon hearing its name. Spontaneous recall of a brand is a situation in which consumers can think of a given brand on their own upon hearing of a category of products and the needs they satisfy. Branding is, therefore, a continuous and complex process which creates brand identity through ascribing given traits and attributes to it, thus building brand awareness and image.

Rebranding is not only changing the visual, Figureical image (though this is the most common approach to rebranding), but a series of decisions related to broader aspects of brand perception. Many companies, especially big firms and global corporations operating as franchise systems, have regularly rebranded their outlets by changing one, some or many elements of their activity and image. Looking at the list of the world's 100 biggest franchises in 2015, fast food brands dominate the list [Franchise Direct 2015].

For example, McDonald's and Burger King had no indoor dining till the 1960s – and that was part of their strategy.Their strategy was also strongly focused, referring to the R. Lauterborn 4 C's Concept [Lauterborn 1990], on convenience and therefore, adapting to new consumer trends, they have shifted towards indoor dining. As A.F. Smith pointed out, most companies require their franchisees to change their design every few years. When McDonald's shifted from the original red-and-white-tile drive-in design to a brick building with indoor sitting, the change increased sales by more than 50%. Adding drive-thrus a few years later brought similar results. Rebranding occasionally meant attracting new target audiences, such as children, those interested in eating a fast food breakfast, or those who wanted more nutritious meals. Today, chains are adding new technology, new equipment, new products, and new architectural designs. Constant rebranding keeps up the company's image and tells customers that there's always something new and innovative about the chain [Smith 2012]. The study suggests that, although periodically redesigning a brand logo is a pre-requisite to guarding one's position in consumers' consideration set, drastic changes require more time to process, especially from highly brand conscious consumers (deeper levels of attention), and their attitude towards the brand becomes more negative [Verlregh et al. 2015].

As is the case of marketing, where there is not a single mode of action accurate always and for all enterprises, there is no single effective course of action in branding, no universal strategy to successfully communicate and market a brand.In business practice, rebranding is one of the ways of reacting to deteriorating or bad brand image: resurrecting it in consumer awareness. Several phenomena may justify rebranding strategies, such as [Kłosiński 2015]:

- customers having no emotional connotations with the brand,
- new fashions and customer trends,
- customers considering a brand untrustworthy,
- mergers or takeovers.

Another motive for rebranding can be an attempt at changing or erasing some stereotypes associated with a brand or company [Borbis Media 2015] Rebranding is a process of creating new image of a product, service or organisation in an attempt at distinguishing this image and its associations from the competition in the customer perception. Successful rebranding should distinguish a brand from the competition and be conform to company mission and strategy [Danilewicz 2015].

METHOD

The theoretical part was based on literature review, and the following research questions have been posed:

- How is the grocery market perceived in Poland?
- What is the image of grocery market brands and what elements are coded for this category?
- Do rebranding activities influence the image of chosen brands on said market, and if so, how?

Answering these questions was done through primary studies. Quantitative research through online questionnaire has been made via the ankietka.pl website in October and November 2015. Exactly 148 answers were received, though 131 questionnaires were qualified for analysis. The majority of the respondents had university education (44% having a master degree and 12% finished postgraduate courses), lived in large cities (25% living in cities up to 500 thousand inhabitants, and 58% in cities with over 500 thousand inhabitants) and were aged 18-65, with age proportions being: 18–24 (32%), 25–34 (37%), 35–44 (23%), 73% were women, 27% were men.

Qualitative research, in the form of focus interviews, was conducted between 12th and 15th October in two groups eight participants each. The participants were students of two colleges of Wrocław (aged 20–24). They were not previously acquainted. During the interviews they were shown materials related to grocery market brands (brands of certain grocery stores and foodstuff manufacturers) which had undergone rebranding processes, and they were asked about their feelings and opinions on those brands and changes in their image.

Analysis of literature and own results also allowed to formulate several hypotheses, which have been presented in the summary of this article.

FINDINGS

Grocery stores offer an inclusive variety of food products, household goods and medicinal products to local areas. According to a survey conducted by Information Resources Inc., 52% of shoppers choose a grocery store to shop in based on the lowest prices on the items they're looking for [Legler 2014].

Respondents were asked to list the qualities they take into account when buying groceries, and to point out the qualities they considered the most important. The large majority (70%) agreed that the country of origin was the least important aspect of grocery products. The four most important qualities were, from the top: the price, the brand, expiration date and packaging esthetics. Vast majority of respondents agreed that it was important for a product to be of Polish make (as seen on Fig. 1).

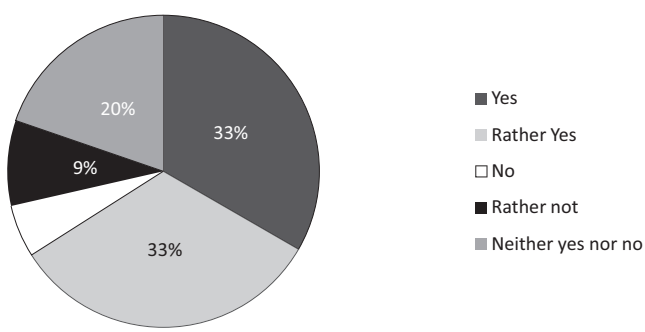

Fig. 1. Is it important for you that the food product is of Polish origin?

Source: Based on author's own research.

Respondents were also asked to determine for which kinds of food products the brand mattered most or least (where 1 mattered most and 9 mattered least), and the majority stated that the brand was most important in meat and cold cuts products. Figure 2 shows the results of this evaluation in detail.

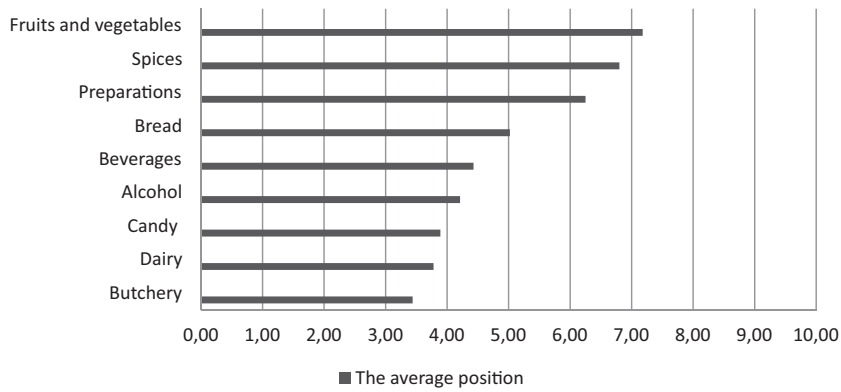

Fig 2. What categories of foods is of the most importance for you, and which the least?

Source: Based on author's own research.

In answer to questions about foodstuff advertisements (where a maximum of three responses could be chosen), respondents replied that they should be factual (73%) and show the product's history (52%). Figure 3 shows the responses in detail.

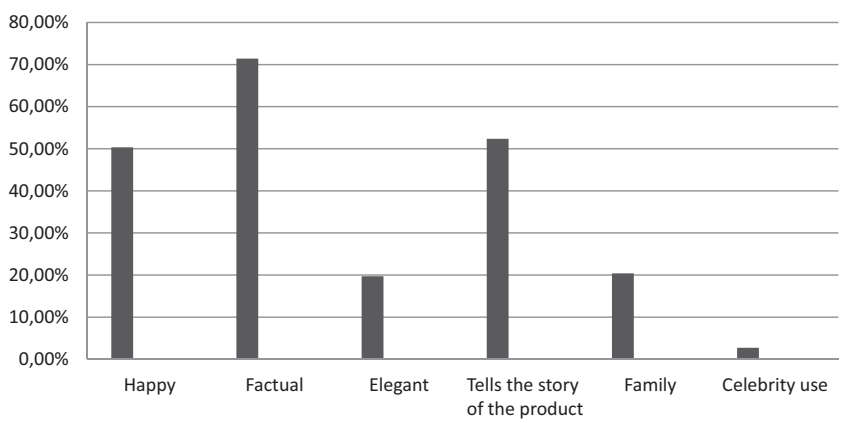

Fig. 3. What should be a good advertisement of food products?

Source: Based on author's own research.

These results were confirmed in qualitative research: respondents said that grocery advertisements should be "modern and contain elements of storytelling" and "have high esthetical quality". During focus interviews, respondents noticed an important, positive

influence of TV shows on cooking and healthy eating on the grocery market (it should be noted here that 71% respondents said information on environmental and ecological properties of the product was important for them). This is reflected in rebranding projects. Two examples were studied, that of the Lidl discount chain and Roleski, manufacturers of mustard, mayonnaise and ketchup. Both cases were evaluated positively: respondents claimed Lidl helps to inform the public on healthy eating, and Roleski managed to create a brand identity for itself. All members of the focus group said they were not aware of the brand's existence before their rebranding projects, despite the fact that Roleski was the first company in Poland to obtain a concession to produce mayonnaise in 1972.

CONCLUSIONS

The core idea of branding process is brand identity – the ways in which brand architects create brand personality and how they want the clients to perceive it. In a narrow sense, the meaning of branding is to create specific brand image in consumers' minds. This definition limits the branding process to creating a product, brand or service, and to activities introducing the brand to the market. In a broader sense, branding is a process connected to marketing strategy, which aims to create and strengthen the positive image of a particular brand. Brand personality plays a crucial role in the branding process.

Rebranding, or "creating brand again", can be divided into active and reactive phenomenona, as this difficult process is usually performed for two main reasons. The first is an active desire to change the brand image by distancing it from the past, unattractive image or to communicate new features to consumers. The second reason is a consequence of brand ownership change, mostly through a takeover or merger, which naturally force changes.

Our research has shown that Polish consumers are aware of brand importance on the grocery market: it is of equal importance to product price to them. Consumers expect factual information, but also – since they follow modern consumer trends – they appreciate and expect the brand's story (storytelling advertisements). Important qualities in grocery market branding are family and humour. Esthetics and educational aspects of branding (environmental information) have also been pointed out as important, and respondents have shown themselves to be supportive of ethnocentric consumer attitude.

Rebranding is a process of creating new image and reception of a brand, product, service or organization, in an effort to distinguish this image and its associations from the competition. Rebranding process may concern changes in the logo, name, packaging, marketing communication, or category code (for example changing the color scheme used in the entire category). Effective rebranding should distinguish a brand from the competition.

Basing on the analysis performed, the authors formed the following hypotheses:

- H1 – there are certain specific traits ascribed to a grocery brand which can positively influence its reception.
- H2 – rebranding on the grocery market can have significant influence on repositioning the brand in the long term.
- H3 – the so-called consumer trends have a significant influence on rebranding processes on the grocery market.

- H4 – rebranding the leader of a given section of the market has a positive influence on the image of the whole section.
- H5 – rebranding has a positive influence on customer loyalty in the long term.
- The authors intend to verify these hypotheses in the course of further original research.

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BRANDING I REBRANDING NA PRZYKŁADZIE RYNKU SPOŻYWCZEGO

Streszczenie: Artykuł przedstawia problematykę związaną z procesem brandingu i rebrandingu jako strategii kreowania wizerunku marki na przykładzie rynku spożywczego. Celem artykułu jest analiza działań brandingowych na rynku spożywczym oraz identyfikacja po-

wodów podjęcia się określonych działań i taktyk rebrandingu. Marka jest ucieleśnieniem wielu atrybutów, niektóre z nich są duchowe (jak np. wartość, misja), inne wizualne (jak np. logo). Zmiana wizerunku jest jednym ze sposobów podtrzymywania lub pozyskiwania przewagi konkurencyjnej. Efektywne działania rebrandingowe – te, które pozytywnie wpływają na wizerunek marki – powinny odróżnić markę na tle konkurencji, powodować wzrost świadomości marki i być spójne z misją i ze strategią marki. Artykuł opracowano na podstawie studium literatury krajowej i zagranicznej oraz wyników badań własnych o charakterze pierwotnym (badanie ankietowe oraz grupy focusowe).

Słowa kluczowe: branding, rebranding, wizerunek marki, tożsamości marki, rynek spożywczy

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SENIOR CONSUMER BEHAVIOUR – WORLDWIDE RESEARCH AREAS VERSUS POLISH ONES

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Abstract. The dynamic demographic changes characterised by population ageing are a significant factor determining the interests of economists. The importance of the senior citizen segment in various dimensions (economic, social) is currently underlined in both scientific and popular publications. In Poland the area of senior consumer behaviour is becoming an increasingly popular topic among many researchers and in research institutes. However, the research areas discussed in Poland are often different from the ones discussed in other countries. The aim of this article is to specify the research areas present in the approaches of researchers worldwide (mostly in the US and Western Europe) versus the ones in Poland.

Key words: senior consumers, consumer behaviour

INTRODUCTION

The dynamic demographic changes characterised by population ageing are a significant factor determining the interests of economists. The importance of the senior citizen segment in various dimensions (economic, social) is currently underlined in both scientific and popular publications. Many scientific fields recognise senior citizens as an interesting research area. In marketing there is an ever-increasing interest in seniors, not only as a marginal topic or an indication of interesting business opportunity, but also as an actual research subject. Although the significance of this market segment is more and more widely recognised in Polish literature, only a very small group of researchers have carried out their own scientific studies which would confirm or falsify the hypotheses formed.

In Poland the area of senior consumer behaviour is becoming an increasingly popular topic among many researchers and in research institutes. However, the research areas discussed in Poland are often different from the ones discussed in other countries. The

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aim of this article is to specify the research areas present in the approaches of researchers worldwide (mostly in the US and Western Europe) versus the ones in Poland.

Population ageing in Poland is considered to be the most significant demographic change which determines all aspects of the socio-economic life in the country. The population ageing phenomenon implies demographic, social, cultural and medical consequences which people are often unaware of. In many countries, including Poland, the process has been on the increase for the past several years, and the effects it brings along are becoming more and more visible. In the economic sphere the increasing number of senior citizens significantly influences the structure of the division, the exchange, and the consumption of goods. Moreover, as a human being ages the physical and psychic changes that take place alter their market behaviour.

According to the Central Statistical Office of Poland (GUS) still in the year 2000 there were 6.3 million people aged over 60, and in 2014 this number increased to 8.5 million [GUS 2015]. The demographic forecasts predict further ageing, which will result in the number of people at or over 60 reaching the 10 million threshold at the turn of 2016 and 2017. It is worth to notice that the Polish Parliament (Sejm) has expressed interest in senior citizens by issuing the Bill on elderly people on September 11, 2015. The bill specifies how the information about the elderly people's situation is monitored and displayed, what institutions participate in the task, and what the financing sources are. The most interesting aspect of the bill, in the light of the analysis to follow, is the regulation defining an elderly person/ /a senior citizen: pursuant to article 4 point 1, an elderly citizen is one who turns 60[1].

MATERIAL AND METHODS

This article is based on a literature research of secondary sources. The sources used for the analysis included mainly European and North American[2] publications (among others from the indexed database of Emerald, ScienceDirect, Elsevier, Jstor, and Willey Blackwell Journals) and Polish publications issued by domestic research institutes (among others journals, scientific booklets and monographs, and conference releases).

RESULTS AND DISCUSSION

The large interest in senior consumer behaviour is understandable on the world market. In the western societies population ageing processes are currently on the increase, and they were noticed as early as the mid-20th century. The first analysis of the growing purchasing potential of the seniors segment was observed already in the 1960s [Dodge 1962, Reinecke 1964]. The research studies carried out confirmed that it was a group of consumers significantly different from other consumer segments in terms of purchasing processes.

[1] Ustawa z dnia 11 września 2015 r. o osobach starszych, Dz.U. 2015, poz. 1705 [The bill on elderly people, September 11, 2015. Journal of Laws 2015, item 1705].

[2] The author is aware of the limitations of the method applied – one needs to acknowledge that a considerable body of research concerning senior citizen behaviour has not been published and made publicly available.

The research areas and topics involved the literature study carried out allows one to observe some tendencies in the researchers' interests worldwide. Since the 1990s the research in the USA and Europe has focused on identifying and profiling the senior consumer segments. There have been several attempts to segment the senior consumer market [Sorce et al. 1989, Moschis 1993, Oates et al. 1996, Silvers 1997, Sudbury and Simcock 2009]. The body of research unanimously indicates that the senior market is very diversified. The authors identify between five and seven significant micro-segments of elderly citizens which differ from each other on many variable levels (the research was carried out both in the USA and in Europe).

The second leading research area in the world publications attempts to build a model of elderly consumer behaviour in the food product market. The research studies in question aimed, among others, at specifying and understanding the decisions and circumstances that influence the quantitative and qualitative choices of food products [Lilley 1996], specifying the food product choice in shops and analysing the purchasing stages [Hare et al. 2001], identifying the key areas of dissatisfaction (the goods, practices, and the seller's procedures, external trading factors) [Hare 2003], specifying the diet and the nutritional condition [Wynne 1999], identifying the key elements contributing to rebuying the same food products by consumers based on previous positive and negative experience [Hare et al. 1999]. In order to add to the information regarding consumers' food purchases (acknowledging the positive correlation between the consumers' age and their health related interests), a research study was carried out in 2008 and 2014 on the perception of functional food products among senior citizens. The aim of the first study [Messina et al. 2008] was to specify the determinants of functional food product purchases based on interviews with seniors in eight European countries (Great Britain, Denmark, Germany, Poland, Portugal, Spain, Sweden and Italy). This allowed to determine that the familiarity of the product/previous consumption experience was the key factor that helps to distinguish healthy and "unhealthy" products. In 2014 a research study concerning the perception of nutrition information on food packages was carried out. The eye tracking method was used to determine how the information about the ingredients of the product expressed in absolute values is perceived (i.e. in milligrams or grams) as opposed to the one about relative values (% DV) [Soederberg and Miller 2014]. In conclusion, the growing potential of the senior segment in food consumption (especially functional food) was recognised, however, with indications to significant limitations – smaller income, poorer mobility, and as a result more limited access to shops. Another study within this area concerned elderly consumers' experience with food packages. The study specified the physical problems occurring when the packages were used, and indicated that the elderly consumers displayed a high level of frustration and a feeling of unfamiliarity when selecting food packages [Sudbury-Riley 2014].

The third popular research area concerning senior consumer behaviour is to identify the factors determining the purchasing process realised in chain stores and small shops. In 2004 Moschis and his team undertook the task of determining the factors and the circumstances that influence the food shop choice [Moschis et al. 2004]. In the year 2005 the experience of Australian seniors concerning supermarket shopping was described. The results indicated the main problems that the seniors faced when shopping: the improper attitude of the supermarket staff, unsatisfactory functionality of the equipment (trolleys,

baskets), as well as a confusing arrangement of the products on the shelves [Pettigrew et al. 2005]. Three years later other authors identified senior consumers' needs when shopping [Myers and Lumbers 2008]. The topic of specifying the behavioural changes of senior consumers in the food market is very popular in the literature worldwide [Meneely et al. 2009]. The research carried out allowed to confirm the hypothesis that with age there is an increased interest among seniors in local shops, a bigger attachment to a given brand, and a decreased accessibility of points of sale (due to health problems). A research study from 2013 revealed that one of the main problems of seniors during the purchasing process was to understand the ways and motives behind the specific arrangement of products in shops, within a given category, as well as on shelves [Yin et al. 2013]. Purchasing was to a large extent a process of selecting specific brands. In 2006 models of brand purchasing by senior citizens were specified by means of Juster's method (the scale of purchase and brand selection probability). It turned out that the selection of leading brands in the segments of 40 year olds and younger, the segment of 40 to 59 year olds, and the one of 60 to 74 year olds were to a large extent convergent [Mark and Lee 2006].

The fourth area of exploration focuses on the use of various services by the seniors. In 2009 a research study was carried out whose aim was to determine the stages of new service purchases targeted at seniors – household services, as well as medical and financial ones [Nasco and Hale 2009]. Five years later a similar attempt was made to specify which psychological and demographic features of consumers decide about the financial service consumption. As the research results pointed out, the modern consumption of services was to a large extent dependant on family factors [Milner and Rosenstreich 2013].

The fifth research area, which can be noticed when analysing secondary sources, was to recognise the methods and the circumstances of the clothing purchases by senior citizens. The results of research from 2002 presented by a research team confirmed that there were significant age-related differences in the perception of clothes shops attributes among the female respondents [Moye and Giddings 2002]. In 2007 other authors decided to determine the effectiveness of fashion advertising aimed at female consumers over 60 [Borland and Akram 2007]. Two years later a research study aimed at determining the lifestyle and purchasing preferences of female consumers over 60 [Boyd Thomas and Okleshen Peters 2009]. The knowledge about senior consumer behaviour in clothing market was also deepened thanks to a research study carried out in 2010 aimed at the risk and profit assessment performed by mature consumers when buying online [Kwon and Noh 2010]. A year later the topic of the motives behind clothes brand selection by consumers re-occurred in research. The results revealed significant relations between the seniors' intention to buy a specific item of clothing and the special price offer instrument, as well as the opinions of the family members, friends and shop-assistants [Moschis et al. 2011].

Apart from the leading research areas there is a considerable amount of interest from many authors in senior consumer behaviour in various branch markets. In 1998 the senior consumer behaviour in the OTC drug market was described on the basis of a research study [Shufeldt et al. 1998]. In 2004 a team of researchers determined the senior consumer attitudes towards ethical consumption, indicating a large potential of the consumers in this area [Carrigan et al. 2004]. A year later a research study was carried out, concerning new car purchasing process by seniors and specifying the hierarchy of factors and attitudes towards car makes [Lambert-Pandraud et al. 2005].

The dynamic development of the Internet after the year 2000 spawned the researchers' interest in senior citizens attitudes towards e-commerce [Leppel and McCloskey 2011]. Research results revealed that elderly consumers felt more frustrated when searching for product information, and paid more attention to financial safety while purchasing online. It is worth to mention the empirical studies determining the reasons why banking service innovations were not accepted by seniors in the mobile phone market [Laukkanen et al. 2007].

In Poland, despite much interest observed, definitely a smaller number of research concerning senior citizen purchasing behaviour has been carried out. The domestic research studies on the elderly market behaviours very often comprise a variety of issues (it is difficult to classify the research areas), and the topics under research are frequently very general (although one can also come across very specific/selected consumer behaviours). Polish research on senior citizen consumption is characterised by its locality/rationality (in the majority of cases the research concerns one city or one region – voivodeship), small focus groups (usually several dozen seniors – lack of information about the diversity of the research group), as well as the recruitment of the respondents from the "students" of the third age universities.

The first comprehensive scientific publication dealing with senior consumer market behaviour was issued in 2002 by Kusińska in *The living conditions of elderly people and their market behaviour* [Kusińska 2002]. The research area was very wide and specified the following aspects: the determinants of market behaviour of the consumers, the factors influencing the purchasing choice of various product categories, the preference of the shopping location, the influence of special offers on purchase, and the senior citizens attitudes towards purchasing new products. Unfortunately this was the first, and up to this day (2015) the only research on seniors with such a comprehensive approach. In the following years other research studies were carried out, however, neither their range nor the sample size and the topic selection were as significant.

In 2009 Świtała with his research team made a study aimed at determining the influence of the seniors health condition on their consumer choices [Świtała 2009]. The research was based on a sample of 500 citizens of the Silesia Region and confirmed a hypothesis that it was the self-evaluation of respondents health condition determined the consumer behaviour in the population in question, mainly influencing the frequency of shopping and the level of health related expenditure.

Reviewing the literature on senior consumer behaviour research it is worth to mention the initiative of the Poland's Office of Competition and Consumer Protection (UOKiK), which carried out research in 2009 on the consumer awareness of senior citizens, analysing, among others, their buying habits (purchasing location preferences) [UOKiK 2009].

An interesting research was performed by the aforementioned Świtała [Świtała 2011] as a part of his promotional work in 2011. The study, based on a sample of senior citizens from the Silesia Region characterised the behaviour of senior consumers in terms of the purchasing determinants, the specificity of the purchasing process, the consumer purchasing habits, as well as the psychological profiles of elderly consumers.

In the same year Grzybowska-Brzezińska with her research team carried out research whose aim was to identify the purchasing profiles of senior citizens from the city of Olsztyn [Grzybowska-Brzezińska and Szmyt 2011]. An interesting view on consumer behaviour is offered by the work *The 55+ consumer as a Challenge to the market* [Bombol

and Słaby 2011]. The monograph makes a significant contribution to the systematisation of the knowledge on population ageing; it is also the source of information on the 55+ consumers demand for modern services.

In 2012 Bylok made a research study on senior consumers "studying" at the Third Age University at Czestochowa University of Technology [Bylok 2012]. The research concentrated on specifying the directions of elderly people basic expenditure, the favourite shopping locations, the sources of the information about the market offer (with special attention paid to determining social influences), as well as identifying the basic determinants of product and service purchasing.

Undoubtedly the widest spectrum of senior citizens behaviours in Poland was presented in 2012 in the project called POlsenior [Mossakowska et al. 2012]. Apart from dealing with health related aspects and the social behaviour of seniors, an attempt was made in one of the research areas (and on a rather small scale) to specify the nutritional habits of the seniors and to provide a subjective assessment of their material situation. It should be underlined, though, that the monograph in question is the only study allowing for such meticulous a description of senior citizens behaviour in terms of the factors that significantly influence their participation in the purchasing process – it specifies in detail the seniors health condition, their psychic and physical condition, the family ties in their environment, as well as their physical activity.

Another important research study concerning consumer behaviour of Polish seniors was carried out in 2012 by Maison [Maison 2012]. The research focused on specifying consumer attitudes towards a variety of financial issues – finance management or the use of modern technologies by senior citizens. An interesting approach to senior consumer segmentation was offered in 2013 as a part of a report on Polish consumer 50+ by the 4P Research Mix agency [*A Syndicated Report 2013/2014. Polish Consumer 50+*].

In 2013 Jerzyk carried out the research on senior preferences concerning food packaging [Jerzyk 2013]. In the same year a team of researchers from Kozminski University carried out a study on ethnocentric attitudes among senior consumers [Awdziej et al. 2013], and Rogala with a team conducted a pilot study concerning product selection criteria of senior consumers (who were students at The Third Age University in Poznań) [Rogala and Fojutowski 2014]. In 2014 Jerzyk published the results of her research on nostalgia and its influence on senior citizens behaviour. The research study had been carried out among 221 citizens of the Wielkopolskie Voivodeship aged above 55 and tested the hypothesis that nostalgia can be a useful tool in marketing communication with Polish seniors [Jerzyk 2014]. In the same year the nutritional decisions of Polish and Finnish senior citizens were compared in another research study [Człapka-Matyasik et al. 2014]. The differences between the seniors from the two countries concerned mainly getting acquainted with the information on food labels, the priorities in food product selection, and the habit of eating out.

CONCLUSIONS

To sum up, the above literature review allows one to point the essential differences in the approaches to research on senior citizen behaviour between the researchers worldwide and in Poland. The foreign sources are characterised by certain maturity and con-

sistency in the process of exploring the market behaviour of senior citizens. The research areas that have been distinguished are explored by new researchers, and systematically the array of knowledge about senior consumers develops and deepens. In Poland the research on senior citizens is very diversified – each year new research topics are explored and it is difficult to distinguish any special areas of interest. It is also difficult to verify the research results, as it is all too rare that a research topic is continued in another research study. Thus, it seems that the area of senior consumer behaviour in Poland has still a great research potential.

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ZACHOWANIA KONSUMENTÓW SENIORÓW – PORÓWNANIE ŚWIATOWYCH NURTÓW Z POLSKIMI

Streszczenie. Dynamiczne zmiany demograficzne polegające na starzeniu się społeczeństw istotnie determinują zainteresowania ekonomistów. Znaczenie segmentu konsumentów seniorów w różnym wymiarze (ekonomicznym, społecznym) podkreśla się obecnie we wszystkich publikacjach zarówno naukowych, jak i tych o charakterze publicystycznym. W Polsce obszar zachowań konsumentów seniorów staje się coraz częściej podejmowanym tematem w rozważaniach instytutów naukowych i wielu niezależnych badaczy. Obszary podejmowanych badań w Polsce są nierzadko odmienne od tematów badań realizowanych w innych krajach. Celem artykułu jest porównanie obecnych nutów badawczych z różnych stron świata (przede wszystkim w USA i krajach Europy Zachodniej) z podejściem badaczy w Polsce.

Słowa kluczowe: konsument senior, zachowania konsumentów

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LEADER PROGRAMME AS THE SOURCES OF FINANCING LOCAL ACTION GROUP ACTIVITIES IN THE MAZOVIAN VOIVODESHIP

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Abstract. The article is dedicated to the analysis financing Local Action Group activities of the Mazovian voivodship from the LEADER Programme. The analysis covers LAG support capabilities from sources of the LEADER programme in years 2007–2013. Authors' aim is to evaluate funds used from the LEADER programme by LAGs in Mazovian voivodship. In Mazovian voivodeship is 35 LAG which have at their disposal 337 million PLN. It can be noted that the Mazovian voivodeship is the leader with the biggest number of submitted applications and signed contacts.

Key words: LEADER Programme, local development, European Rural Development Policy, Local Action Group, Local Development Strategy

INTRODUCTION

In the early 1990s could be observed increasing problems of rural areas, such as: migrations, lower income from a strictly agricultural activities, an aging population, unemployment, social exclusion, low diversification of the labour market, worse access to basic services and pro-environmental role of agriculture and forestry. Those problems have led the EU to work towards for showing the multifunctional role, importance and development rural areas and their resources. Initiative contributes to reduce and solve these problems became the LEADER [Borowy and Sawicka 2007, Borowska 2009].

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The LEADER approach involves a policy drive to promote the socio-economic development of rural areas. It is connected with local initiatives, organised by partnerships between stakeholders within procedures of contractualisation with higher levels in the territorial system. The LEADER programme assumes the involvement of local stakeholders in cooperation networks to design and implement development projects. These forms of cooperation introduce new practices of territorial management referring to the "local governance" paradigm. Implemented principles remove public action from the monopoly of institutions and the administration and transfer it to groups of stakeholders of varying backgrounds and skills [Leloup et al. 2005, Helling et al. 2005].

In the years 1991–2006 programmes LEADER I, LEADER II and LEADER+, according to the plan of the creators, played the role of a laboratory which encouraged the development and testing of new methods of integrated and sustainable development. The LEADER[1]approach has been an important part of EU Rural Development Policy to its replenishment and effective implementation. Since 2007 is has been funded by the European Agricultural Fund for Rural Development (EAFRD). In the period 2007–2013 it was successfully applied in fisheries areas as Axis IV of the European Fisheries Fund [Chevalier and Maurel 2013].

MATERIAL AND METHODS

The aim of research is to evaluate rural development support through sources form LEADER programme on the example of Local Action Group (LAG) from Mazovian voivodship. Analyses, carried out in the paper, cover the period of 2007–2013. Research period and selection of indices were also determined by the time of the financial perspective of RDP. The Local Action Group of Mazovian voivodeship are an object of complex investigation.

The data about theoretical and financial issues of the LEADER programme were taken from the official sources the applicable literatures, legal acts, the Ministry of Agricultural and Rural Development (MARD), Agency for Restructuring and Modernisation of Agriculture (ARMA) and the European Commission data. The descriptive and comparative methods were used in the research paper, as well as the simple statistical method in order to analyze the problem from the economic point of view.

The paper starts with the presentation of the main principles and problems of LEADER programme. Later the of main assumptions and the support capabilities of the LEADER programme are enlightened. In the last part, the evaluation of funds used from the LEADER programme by LAG in Mazovian voivodship; finalizing and applicable conclusions are offered.

[1] LEADER (Liaison Entre Actions de Développement de l'Économie Rurale, meaning "Links between the rural economy and development actions") is a local development method which allows local actors to develop an area by using its endogenous development potential.

RESULTS AND DISCUSSION

LAG support capabilities from sources of the LEADER programme in years 2007–2013

Axis IV of the RDP 2007–2013, includes three activities. The main objective of Axis IV LEADER is to activate people in rural areas by building the social potential of rural areas and increase the possibilities of acquiring financial resources and their use for the implementation of local development strategies, grassroots initiatives inhabitants of rural areas and the implementation of small projects that contribute to improving quality of life and work in small rural localities [Kovách and Csurgó 2013, *Wykorzystanie…* 2015].

In Poland there are the largest local action groups among all the European Union countries – initially functioned 338 LAGs, there are now 336. The strategies by the LAGs cover more than 90% of rural areas, which indicates a high potential villagers who saw the value prepared of the resources available in their areas and set themselves goals that they want to realize through their use [*Ocena…* 2014]. The total amount that has the Rural Development Programme for 2007–2013 in Poland amounts to about 17.2 billion EUR, including the Axis IV LEADER has been allocated about 787 million EUR, this including: the Implementation of the local development strategy; Inter-territorial and transnational cooperation functioning of Local Action Group. The broad objectives of the LEADER Axes of the Programme are to improve the quality of life in rural areas and to encourage diversification of economic activity in rural areas including supports for non-agricultural activities. The largest amount of funds was assigned to measure 413 (Implementation of the local development strategy) – Table 1. Total cost of measure 413 was calculated at 1,023.62 mln EUR but 60.6% of them were public expenditure.

Table 1. Allocation of funds between the measures of the Rural Development Programme in Poland in 2007–2013 (million EUR)

Action Code	Name of the Measure/Axis IV	Public expenditure	Private expenditure	Total costs
4.1/413	Implementation of the local development strategy	620.50	403.12	1 023.62
421	Inter-territorial and transnational cooperation	15.00	0.00	15.00
431	Running costs, acquisition of skills and animation of LAG	152.00	0.00	152.00
	Total only Axis IV	787.50	403.12	1 190.62
	Total Axis III	3 430.18	1 369.16	4 799.35
	Total Axis I, II, II and IV	16 951.22	7 842.53	24 793.75
	Technical support	266.60	0.00	266.60
	Total RDP 2007–2013	17 217.82	7 842.53	25 060.35

Source: RDP 2007–2013.

Within Axis IV established 336 Local Action Groups (LAGs) that implement local development strategies. In implementing actions axis IV LEADER beneficiaries they submitted more than 58 thousand applications. Contained has more than 25 thousand contracts amounting to nearly 2.4 billion PLN. Already paid nearly 1.4 billion PLN. Projects implemented under local development strategies enabled the construction, modernization and equipment 1,724 community centres, houses of culture, sports and recreation buildings, 1,488 sports grounds, playgrounds and recreation places in small towns in rural areas. Local communities implement projects that contribute to attractive recreational areas by building or upgrading 672 landscape architecture, 141 green spaces, parks and other recreation. Also were renovated 149 historic buildings, including religious buildings and 25 monuments of history and memory locations. Redeveloped 64 reservoirs and water courses, and was formed 695 village centres. To support the development of entrepreneurship created 270 jobs. It was also organized at the initiative of the inhabitants of almost 4 thousand cultural and sporting events. In the illustrated publication you presented projects carried out in Poland within the framework of selected activities the Rural Development Programme 2007–2013 action Axis IV – "Implementing cooperation projects" and "Implementing local development strategies".

Evaluation of funds used from the LEADER programme by LAGs in Mazovian voivodeship

Developed by LAG work plan in the form of a local development strategy (LDS) aims, among others improving the quality of life, creating non-agricultural jobs, activating citizens, promotion of cultural creativity. Under the LDS Local Action Groups choose the projects, which then goes to the provincial governments (i.e. small projects and the renewal and rural development). Among the signed agreements in Mazovia 1805 in the category "small projects" most (831) entered local governments. Frequently funded were training, cultural events, development of public space, tourism and recreation. In the Mazovian voivodeship aid limit on "small projects" 62.46 million; in the category "renewal and rural development" was concluded at that time, 538 contracts mostly on public infrastructure projects, tourism, sport and recreation. This action is to be distributed in the region of 139.2 million PLN. This approach is an effective way of supporting development processes in the country, based on activity residents, who decide what and how they want to do for the community, in which they live. Local Action Group create equal partners, public, private and social. At the moment Mazovia are 35 LAGs (plus two LAGs established outside the province, but also including Mazovian commune), which have at their disposal 337 million PLN. The biggest LAG co-creates 140 thousand residents in 23 municipalities. The average LAG contains approximately seven communes [Katalog LGD 2012].

In Table 2 are presented the financial data concern LAG's in Mazovia voivodeship. It is noticeable that the planned budget was 328 million PLN. The majority of the budget was devoted to the implementation of the LDS and especially for rural revival and development. The conducted budget included 300 million EUR and we can see that 91% of the planned budget was contracted.

Table 2. Financial sources of LAGs in Mazovian voivodeship for particular action within local development strategies (LDS) in the years 2007–2013

RDP 2007–2013 Axis IV – Mazovian voivodeship			Planned (M PLN)	The contracts (M PLN)	The use of the budget (%)
Implementation of the local development strategy	operations that meet the conditions for granting aid	diversification into non-agricultural activities	26.71	23.27	87.12%
		creation and development of micro-enterprises	35.10	25.83	73,59%
		rural revival and development	141.03	132,85	94.20%
	small projects		58.97	51.15	86.73%
	total		261.82	233.10	89.03%
Inter-territorial and transnational cooperation			5,81	5.13	88.40%
Running costs, acquisition of skills and animation of LAG		running costs	43.73	43.71	99.96%
		acquisition of skills and animation	17.41	18.65	107.12%
		total	61.14	62.36	102.00%
Total Axis IV			328.77	300.60	91.43%

Source: Data from MARD, ARMA

On Figures 1 and 2 the number of submitted applications and signed contracts within measure 413 (Implementing local development strategie) by the voivodeship in Poland in 2007–2013 were presented. The difference between number of submitted application and number of signed contract was connected with problems to fulfilled the requirements of the programme. In measure 413_311 (Diversification into non-agricultural activities) can be noticed that the Mazovian voivodeship is the leader with 722 submitted applications and 296 signed contacts. The smallest number of signet contracts within measure 413_311 was noticed in Świętokrzyskie voivodship.

In the same time the Mazovian voivodeship is the leader of measure 413_312 (Creation and development of micro-enterprises). The number of submitted applications is 909, the number of signed contracts is 214. In Opolskie voivodeship the least number of signed contracts was recorded.

In Table 3 the limits and the budget of the measure 413 concerning "Implementation of local development strategies" were presented. Most of local action groups form Mazovian region managed to exploit more than 80% the allocated limit. More than 50% of limits were used by 10 LAGs of Mazovian voivodeship: Kapitał – Praca – Rozwój, Równiny Wołomińskiej, Zielone Mosty Narwi, Aktywni Razem, Partnerstwo Zalewu Zegrzyńskiego, Przyjazne Mazowsze, Dziedzictwo i Rozwój, Puszcza Kozienicka, Ziemi Mińskiej and Między Wisłą a Kampinosem.

The biggest budget comes from the LAG "Kapitał – Praca – Rozwój". In the same time in this local action group the lowest level of implementation of sources was noticed. Among 35 LAG from Mazovian voivodeship only three managed to implement whole limit of sources for measure 413: Między Wisłą a Kampinosem, Echo Puszczy Bolimowskiej, and Na Piaskowcu.

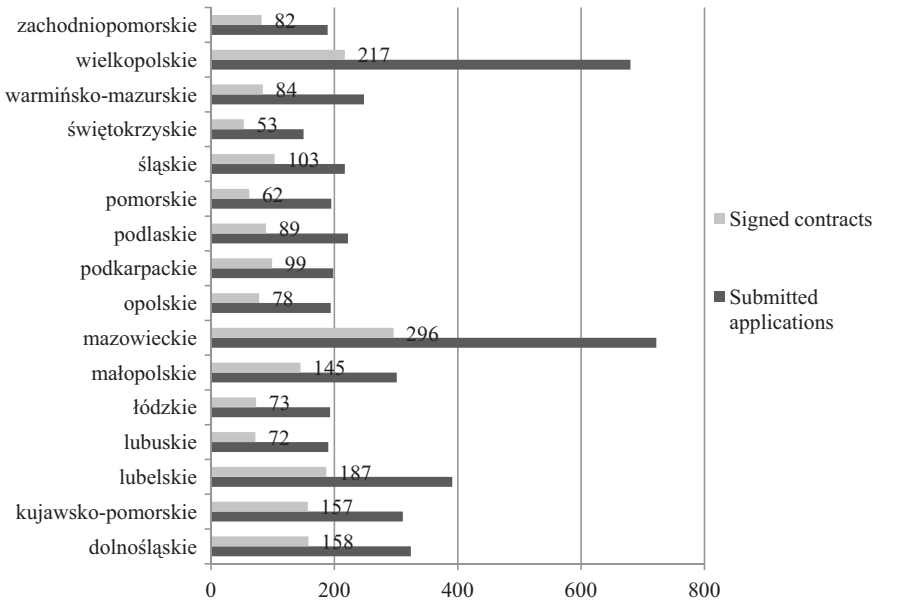

Fig. 1. Number of submitted application and signed contract within Measure 413_311 (Diversification into non-agricultural activities) by the voivodeship in Poland in 2007–2013

Source: Data from MARD, ARMA.

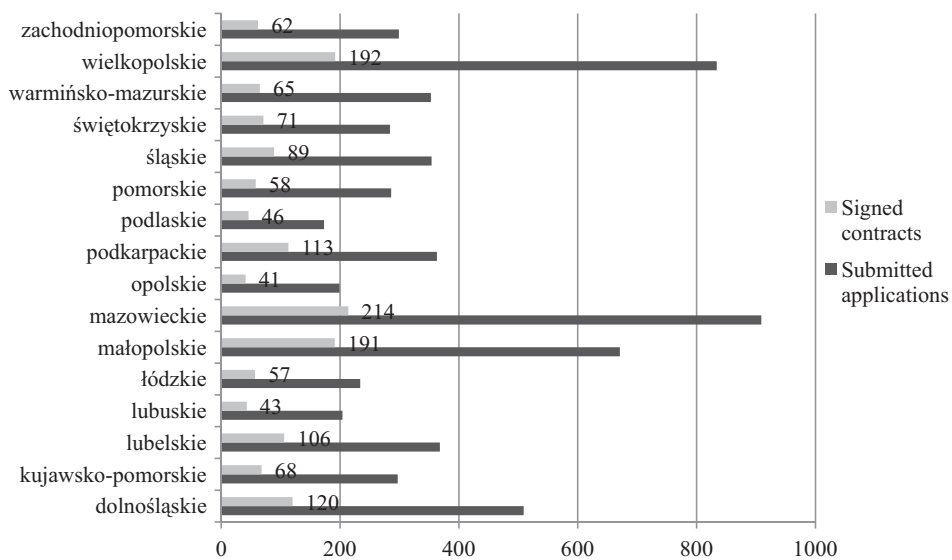

Fig. 2. Number of submitted application and signed contract within measure 413_312 (Diversification creation and development of micro-enterprises) by the voivodeship in Poland in 2007–2013

Source: Data from MARD, ARMA.

Table 3. Limit and implementation of sources for measure 413 among the LAGs in Mazovian voivodeship

No	Name of LGD	Implementation of the sources (%)	Limit (PLN)
1	Kapitał – Praca – Rozwój	75	
2	Równiny Wołomińskiej	85	16 624 084.00
3	Zielone Mosty Narwi	96	13 939 636.00
4	Aktywni Razem	81	12 922 436.00
5	Partnerstwo Zalewu Zegrzyńskiego	87	12 530 000.00
6	Przyjazne Mazowsze	82	11 273 717.00
7	Dziedzictwo i Rozwój	98	11 041 460.00
8	Puszcza Kozienicka	82	10 851 488.00
9	Ziemi Mińskiej	82	10 714 428.00
10	Między Wisłą a Kampinosem	100	10 619 869.54
11	Stowarzyszenie Społecznej Samopomocy	82	10 433 040.00
12	Ciuchcia Krasińskich	94	10 362 512.00
13	Ziemia Chełmońskiego	91	10 077 268.00
14	Forum Powiatu Garwolińskiego	96	8 673 204.00
15	Razem dla Radomki	96	8 147 952.00
16	Kurpsie Razem	90	7 477 708.00
17	Kraina Kwitnących Sadów	87	6 988 651.98
18	Razem dla Rozwoju	86	6 246 252.00
19	Zielone Sioło	94	6 117 840.00
20	Stowarzyszenie Rozwoju Gmin Tarczyn, Prażmów	98	6 045 438.72
21	Stowarzyszenie Rozwoju Ziemi Płockiej	94	5 649 780.00
22	Natura i Kultura	98	4 906 026.51
23	Sierpeckie Partnerstwo	96	4 063 596.00
24	Na Piaskowcu	100	4 018 142.06
25	Wspólny Trakt	90	3 995 620.00
26	Zapilicze	95	3 912 564.00
27	Bądźmy Razem	85	3 416 432.00
28	Zaścianek Mazowsza	98	3 262 964.00
29	Orzyc – Narew	93	3 130 028.00
30	Zielone Sąsiedztwo	88	2 918 560.00
31	Wszyscy Razem	82	2 497 480.00
32	Warka	76	2 192 864.00
33	LGD Gminy Nadpiliczne	94	2 038 700.00
34	Stowarzyszenie Rozwoju Gmin i Miast Powiatu Garwolińskiego	97	1 831 640.00
35	Echo Puszczy Bolimowskiej	100	1 759 461.27

Source: ARMA – Aplikacja OFSA PROW 2007–2013.

CONCLUSIONS

In Poland in the rural area live 38.6% of the total population – they constitute a huge social, political and economic potential in micro and macro scale. In the rural areas of Poland, the LEADER system has gradually gained a position as a central place for learning the principles of endogenous development and local governance. It has helped build more partnerships among stakeholders in local economic and social life. It has encouraged experiments with the participatory approach within cooperation networks set up to drive local development on the basis of intervention programmes – development strategies – defined by consultation.

The bottom-up reversal of rural development policies has apparently gone along with convergence in the management practices for socio-economic development in rural areas to such an extent that there has been a degree of formalisation of the participatory approach. By developing LEADER programme and its use in a variety of instruments, it was possible of:

- the bottom-up appointment strategic to regional development concept of rural areas;
- the use of knowledge, experience and management skills of many people representatives of various social groups towards improving quality of life in rural areas;
- renewal of ties and cooperation (local government, farmers, individuals, the business sector, local organizations) for the economic development etc.

Implementation of LEADER methodology allowed local communities to participate in regional development but also use the knowledge and experience of different social groups (such as local authorities, farmers, business sector, NGO) to improve quality of life and put forward economic development in rural areas [Chmieliński 2009].

When analyzing the particular LDS can be noticed that usually the main aims were devoted to making local communities more active, to develop tourism and also protect cultural heritage.

The success of the implementation of particular LDS was possible thanks to properly prepared strategies. Particularly important was the diagnosis of the area, SWOT analysis and the choice of aims. Effectives was much bigger when local communities were involved in the preparation of LDS. Public questionnaires, public discussions where very useful [Podedworna 2013]. Effective implementation of the LDS also depend on properly chosen criteria. The criteria should promote the projects which are in accordance with strategy aims.

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PROGRAM LEADER JAKO ŹRÓDŁO FINANSOWANIA AKTYWNOŚCI LOKALNYCH GRUP DZIAŁANIA W WOJEWÓDZTWIE MAZOWIECKIM

Streszczenie. Artykuł przedstawia analizę finansowania działalności lokalnych grup działania (LGD) województwa mazowieckiego w ramach programu LEADER. Analiza obejmuje możliwości i wykorzystanie wsparcia LGD ze źródeł programu LEADER w latach 2007–2013. Na obszarze województwa mazowieckiego działało 35 LGD, które miały do dyspozycji 337 mln zł. Można zauważyć, że województwo mazowieckie jest liderem w liczbie złożonych wniosków i podpisany kontakty. Równocześnie obserwuje się zróżnicowanie w limitach wykorzystanych środków między lokalnymi grupami działania z tego obszaru.

Słowa kluczowe: Program LEADER, rozwój lokalny, polityka rozwoju obszarów wiejskich, lokalna grupa działania, lokalna strategia rozwoju

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PROCESS EFFICIENCY SEARCHING AND MATCHING ON THE LABOUR MARKET IN POLAND AND PORTUGAL – COMPARATIVE ANALYSIS

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Abstract. The article compares the effectiveness of the matching processes at the labour market in Poland and Portugal. The relationship between the job vacancy rate and the unemployment rate has been illustrated by the Beveridge curve. In the analysed period, covering the years 2009–2015, the mechanism of adjustments in both countries was found to proceed in a similar manner. A shift of the curve was observed, which may indicate the formation of a short-term point of market equilibrium. However, in the case of the Polish labour market, at the end of the aforementioned period, the curve returned to the previous status, which may indicate an improvement in the efficiency of matching. The aim of the study was to present the relationship between the job vacancy rate and the unemployment rate in Poland and Portugal and to compare processes and trends occurring in the matching mechanism of demand and supply of labour in these two countries.

Key words: labour market, matching function, Beveridge curve

INTRODUCTION

One of the significant features of the EU labour market, but at the same time, the labour markets in the individual EU countries, is that the unemployment rate remains at a fairly high level. It should be noted that a number of measures taken within the framework of the employment policy, only slightly contributes to the improvement of the situation. The improvement of other macroeconomic indicators (such as inflation or the actual average gross salary) does not translate into any significant processes occurring in the labour markets in the European Union (EU). Therefore, it would be reasonable to say that the efficiency of the searching and matching mechanism, between employers looking for workers and job seekers, is on the decrease. This state of affairs could result

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in the sustained high unemployment levels of a structural nature, even in the conditions of a growing economy.

The searching and matching theory may be applied to the analysis of labour markets where frictional or structural unemployment occurs. An important issue tackled as part of the theory is the efficiency of matching of vacancies and job seekers, and the function of matches is an important feature of its model. It describes the relationship between the flow of newly filled job openings, the number of vacancies and the number of job seekers. The matching function enables you to take into account the frictions in the labour market. Due to such frictions, at any given time, only some job seekers will find a job, and on the other hand, only a part of the vacancies will be filled. These values, in turn, depend on another measure, namely the tightness of the market, i.e. the ratio of the number of vacancies to the number of the unemployed. The higher the ratio of these two values, the more difficult it is for employers to find employees [Pissarides 1984]. This relationship was illustrated by the Beveridge curve in the 1940s.

The results of the studies of the relationship between the level of unemployment and the number of vacancies in the European Union (EU) conducted to date, indicate that the shape of the empirical curve, which is the closest to the theoretical model of the Beveridge curve, occurs in such countries as Bulgaria, France, the Netherlands and Poland, while such dependencies cannot be observed in Member States with the highest unemployment rates [European Commission 2013].

The aim of the article is to present the relationship between the vacancy and unemployment rates on the labour markets in Poland and Portugal. A hypothesis has been formulated that the searching and matching process on the labour markets in the analysed countries is characterised by the same dependencies. In order to verify this hypothesis, the theoretical model of the Beveridge curve, translated into empirical data, has been used.

MATERIAL AND METHODS

In the models of the labour market without frictions, wages are the main determinant of adjustment of demand and supply of labour, whereas unemployment in the state of equilibrium does not exist. On the other hand, in the approach under consideration, taking into account the imperfection of the searching and matching process, it is assumed that not every employer looking for an employee will find one and not every job seeker will find a suitable employer. Therefore, there is always unemployment in the short term as some vacancies remain unfilled, while at the same time, a part of job seekers are unsuccessful in their job search. Wages are determined in the process of negotiation and depend on the surplus, both on the part of the employer and the employee, generated after the employment contract has been signed. Accordingly, the balance in this model is not defined by wages and employment levels, but in the categories of vacancies and unemployment rates [Pissarides 2000].

The friction unemployment model in the state of equilibrium has been used in order to verify the formulated hypothesis. In this model, the unemployment in the state of equilibrium is graphically interpreted as the intersection of two curves (Fig. 1): the Beveridge curve (*BC*) and the job creation curve (*JC*). The first curve (*BC*) shows a negative rela-

tionship between vacancies and unemployment rates, while the other curve (*JC*) illustrates decisions of employers regarding job creation. This model is used to study the growth of the natural rate of unemployment [Pissarides 2000].

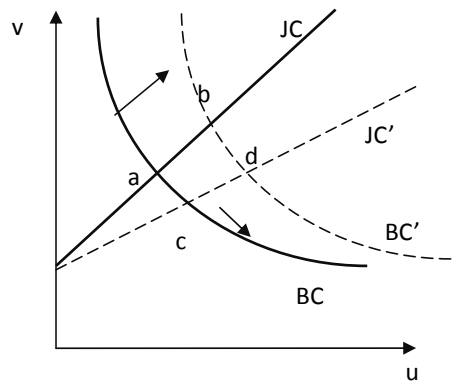


Fig. 1. Stationary equilibrium in the labour market and *BC* & *JC* shifts
Source: Mortensen and Pissarides [1994].

Before we proceed to explain how the relationship between the Beveridge curve and the job creation curve determines the levels of vacancy and unemployment rates, each of these curves should be analysed individually. The Beveridge curve shows the negative correlation between the number of job vacancies and the unemployment rate. The equilibrium unemployment rate drops with the increasing degree of adjustment in the labour market, which is graphically represented by a shift in the curve closer to the origin of the graph. The outward shift in the curve, with the corresponding simultaneous increase in the number of vacancies and the unemployment rate may indicate an opposite situation, i.e. a drop in the quality of adjustment [Buttler et al. 2011]. A lower efficiency of adjustment results in the increase of the frictional or structural unemployment levels, i.e. also the natural rate of unemployment. A movement along the Beveridge curve illustrates cyclical changes in demand for labour. For instance, in a situation where demand for labour is falling, the number of vacancies decreases and the unemployment rate is on the increase (a shift to the right and downward shift along the curve).

In order to analyse this issue in full, we also need to take into account the job creation curve, which is determined by the behaviour of businesses in the area of creation of new jobs. Entrepreneurs create vacancies until the expected value of adjustment of the employee to the post is aligned with the expected cost of filling a vacant post. The first value is determined by the marginal product of labour [Blanchard and Diamond 1989].

In the case of the model concerned, the probability of filling a vacant post increases together with the unemployment rate. Accordingly, the *JC* has a positive slope, which in turn means that businesses report increased demand for labour when unemployment grows (Fig. 1). According to Daly et al., the angle of the curve depends on the structure of the product and the labour markets, the type of wage negotiations, the cost of recruitment, as well as external factors, such as discount or interest rates [Daly et al. 2012].

The fundamental claim of the theory in question is that the unemployment rate in the state of equilibrium is determined by the intersection of the two previously defined curves: *BC* and *JC*.

Changes to the unemployment rate in the state of equilibrium may occur in the following cases [Daly et al. 2011]:

- as a result of the outward shift in the *BC* (in Fig. 1 – the movement of the unemployment rate from point *a* to point *b*);
- as a result of the downward shift in the *JC* (in Fig. 1 – the movement of the unemployment rate from point *a* to point *c*);
- as a result of occurrence of both these changes (in Fig. 1 – the movement of the unemployment rate from point *a* to point *d*).

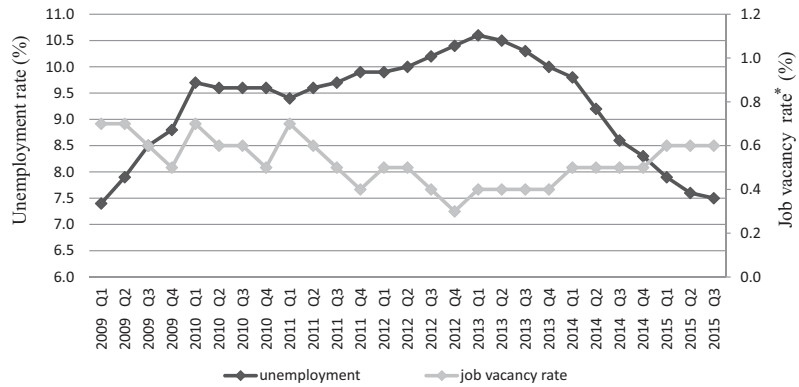
The main conclusion from the above graphic analysis is that the sole analysis of the Beveridge curve does not provide any basis for insightful conclusions about unemployment in equilibrium. Without the information on the job creation curve, we are not able to determine the possible changes to the unemployment rate.

The subject matter literature indicates two directions of empirical analysis. The first direction involves an analysis of factors affecting the increase in the unemployment rate with the simultaneous study of variables that affect the creation of new jobs. Another direction involves an analysis of causes of the shifts in *BC* and *JC* curves, in order to separate the two components of the increase in unemployment, i.e. cyclical changes in demand for labour and one-off stimuli of temporary and permanent nature.

RESULTS AND DISCUSSION

The analysis of the labour market situation in Poland indicates a sustained (i.e. continuing for some time) and relatively high level of unemployment and a low level of utilisation of job vacancies (job vacancy rate) [Idczak 2014]. Starting from the first quarter of 2009, the level of unemployment is characterised by a growing trend, and a reversal of its direction can be observed only at the beginning of 2013. A slightly different form of phenomenon can be observed in the case of job vacancies. At the beginning of the period under consideration, the job vacancy rate is characterised by volatility; at first it drops, and then, after three quarters, it goes back to the level observed at the beginning of the period (in 2009, it amounted to 0.7%). Starting from the first quarter of 2011, until the end of 2012, there is a drop in the job vacancy rate. During the following year, this rate stabilises at a level of 0.4%, resulting in a slight year-on-year increase (Fig. 2).

For the purpose of better understanding of the situation on the Polish labour market, the data describing the actual state of affairs should be juxtaposed with the theoretical model of the Beveridge curve. Figure 3 shows the empirical Beveridge curve, estimated on the basis of data provided by Eurostat. It combines the official unemployment rate with the job vacancy rate, calculated as a ratio of the number of vacancies to the sum of total employment and number of vacancies. It is interpreted as the frequency at which open, but not occupied, jobs appear in the economy [Daly et al. 2012]. Quarterly data from the years 2009–2015 were used for the purpose of curve estimates.



* Job vacancy rate represents the proportion of vacant posts offered by the economy, calculated as the ratio of job vacancies to the total number of occupied and unoccupied posts.

Fig. 2. The dynamics of the level of the job vacancy utilisation rate and the unemployment rate in Poland in the years 2009–2015 (quarterly data)

Source: Developed by the author on the basis of data provided by Eurostat.

The analysis of the data shown in Figure 3 indicates several characteristic periods. The first period, i.e. the three quarters of 2009, demonstrates a significant increase in the unemployment rate and a decline in the utilisation of job vacancies. This is a typical distribution corresponding to the Beveridge curve, and the location of the points demonstrates a downward movement along the curve. This phenomenon occurs during the economic downturn and reflects changes of cyclical nature, i.e. a decline in demand forces down the number of jobs created and contributes to the growth of unemployment. In the last quarter of 2009, there was a simultaneous increase in both indicators. This is reflected by the

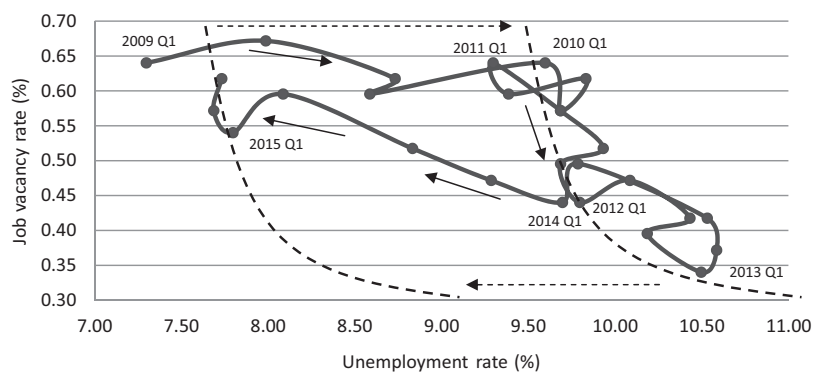


Fig. 3. Beveridge curve for Poland, demonstrating the relationship between job vacancies and unemployment in the years 2009–2015 (data excluding seasonal effects)

Source: Developed by the author on the basis of data provided by Eurostat.

movement of the points from the origin of the graph, which in turn indicates absence of adjustment in the labour market, manifested by difficulties in filling vacancies due to the mismatch between qualifications and employer needs, and the limited labour mobility. In the following period, starting from the first quarter of 2010, the empirical Beveridge curve once again began to take the form similar to the theoretical model. The job vacancy rate began to decrease, while the unemployment rate underwent only minor changes. In the last period, which began in the fourth quarter of 2012, there was a steady decline in the unemployment rate, combined with a slight increase in the job vacancy rate. Such a situation indicates a reduced mismatch between qualifications and employer needs, and improved labour mobility. In terms of the graphic interpretation of such a situation, this corresponds to a shift of the curve to the left.

In the next stage of the analysis of the relationship between vacancies and unemployment, a dotted line was drawn, representing approximately the shape of dependency between these two variables. The period covered by the study was divided into three sub-periods: 2009–2010, 2011–2013 and 2014–2015. Two curves were estimated, for the first and the third sub-periods, and the second sub-period respectively. The curve for the second sub-period may reflect a shift to the right that took place at that time. Such a shift entails deterioration of the labour market adjustment and a higher unemployment rate at a given rate of job vacancies, and perhaps, also a higher level of natural unemployment. Accordingly, during this period, the labour market is characterised by greater inefficiency of the operation of the matching mechanism. However, it should be noted that in the last two years of the period covered by the study, the curve moved back to the estimated curve from the first period. In literature, such a short-term shift in the curve is interpreted as a new short-term point of market equilibrium, characteristic of periods of economic slowdown [Hobijn and Şahin 2013].

The situation of the labour market in Portugal was analysed in the next part of the study. As with the Polish market, also in this case, a sustained (i.e. continuing for some time) and relatively high level of unemployment and a low level of utilisation of job vacancies could be observed. Starting from the first quarter of 2010, the unemployment level is characterised by a growing trend and a decline in this regard may be observed, as with the Polish market, only in the first quarter of 2013. During these years, the job vacancy rate remains at a relatively constant level, and notably increases in two quarters. In the period from the last quarter of 2013 to the third quarter of 2014, we can observe a strong growth in the job vacancy rate. In the following year, this indicator is fairly stable and ranges between 0.6 and 0.7% (Fig. 4).

As with the Polish market, in the next step, the data, previously devoid of seasonal effects, were moved to the unemployment–job vacancy rate correlation. Figure 5 shows the empirical Beveridge curve. Quarterly data from the years 2010–2015 were used for the purpose of curve estimates.

The analysis of the data shown in the figure below also indicates several characteristic periods. The first period runs from the beginning of the time line, up to the second quarter of 2011. At that time, we could observe a slight increase in the unemployment rate and a decline in the rate of utilisation of job vacancies. This is a typical distribution corresponding to the Beveridge curve, and the location of the points demonstrates a downward movement along the curve. This correlation occurs during the economic downturn. In the

Fig. 4. The dynamics of the level of the job vacancy utilisation rate and the unemployment rate in Portugal in the years 2010–2015

Source: Developed by the author on the basis of data provided by Eurostat.

third quarter of 2011, there was a simultaneous increase in both indicators. During the next three quarters, there was a significant increase in the unemployment rate, combined with a relatively stable unemployment rate. This is reflected in Figure 5 by the movement of the points from the origin of the graph. This, in turn, indicates absence of adjustment in the labour market, manifested by deterioration in the efficiency of the searching and matching process with regard to employees and job vacancies.

In the following period, starting from the second quarter of 2012, the empirical Beveridge curve once again began to take the form similar to the theoretical model. The job vacancy rate began to increase, while the unemployment rate underwent a decline (an upward movement along the *BC*). Such a situation indicates the economic upturn. It should be also noted that in the last year of observation, there was a decline in the unemployment rate, combined with only minor changes in the job vacancy rate. Such a situation indicates a reduced mismatch between qualifications and employer needs, and improved labour mobility. However, this period is too short, and as such, does not enable us to conclude that the empirical *BC* moved back closer to the origin of the graph.

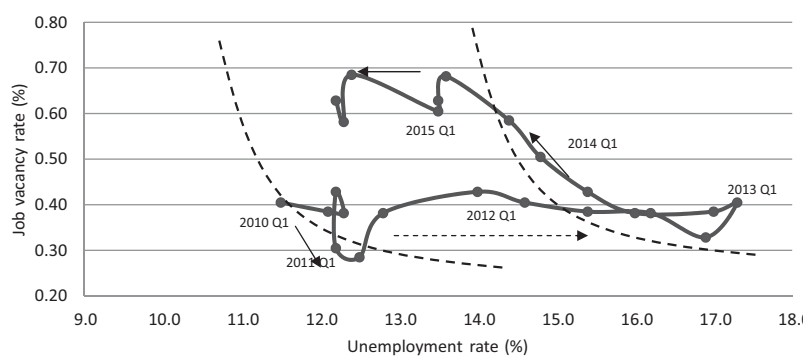


Fig. 5. Beveridge curve for Portugal, demonstrating the relationship between job vacancies and unemployment in the years 2010–2015 (data excluding seasonal effects)

Source: Developed by the author on the basis of data provided by Eurostat.

In the next stage of the analysis of the relationship between vacancies and unemployment, a dotted line was drawn, representing approximately the shape of dependency between these two variables. The examined period was divided into two sub-periods: 2010–2012 and 2012–2014. Two curves were estimated, for the first and the second sub-period respectively. The curve for the second sub-period may reflect a shift to the right that took place at that time. Such a shift entails deterioration of the labour market adjustment and a higher unemployment rate at a given rate of job vacancies, and perhaps, also a higher level of natural unemployment. Accordingly, during this period, the labour market is characterised by greater inefficiency of the operation of the matching mechanism.

CONCLUSIONS

Frictional unemployment, as a phenomenon which is not determined by the lack of an adequate number of jobs, is a natural feature of each economy. It results from the transitional mismatch of demand for and supply of labour, and occurs in a situation where employees change jobs. This type of unemployment is inevitable due to the continuous flows of labour in the labour market (mainly internal flows within the economically active population resources). This is an important area of study, and any resulting conclusions could help to diagnose the causes of excessive levels of frictional unemployment, thus improving the mechanism of adjustment in the labour market.

Given the results of the study, we may conclude that the hypothesis of the same dependencies characterising the searching and matching processes in the labour markets in the countries concerned, has been confirmed. The analysis of the dynamics of the job vacancy and the unemployment rates suggests that the operation of the matching mechanism in the Polish labour market complies with the presented model. The study using the Beveridge curve showed that the labour markets in Poland and Portugal had experienced increased inefficiency of the matching mechanism in the analysed period. The *BC* shifted to the right, which justifies the conclusion that a new equilibrium point has been formed. In the case of the Polish labour market, it was a short-term point, as the curve eventually moved back closer to the origin. As a result, the efficiency of matching of supply and demand on the labour market has improved. According to the adjustment (matching) theory, it is a signal that the efficiency of the process of finding employees by employers is deteriorating. Although similar movements are noticeable, such a conclusion cannot be clearly formulated for the labour market in Portugal as the time line of the analysis is too short.

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EFEKTYWNOŚĆ MECHANIZMU DOPASOWANIA NA RYNKU PRACY W POLSCE I PORTUGALII – ANALIZA PORÓWNAWCZA

Streszczenie. W artykule dokonano porównania efektywności procesów dopasowań na rynku pracy w Polsce oraz Portugalii. Zależność między stopą wakatów a stopą bezrobocia została zobrazowana za pomocą krzywej Beveridge'a. W badanym okresie, który obejmował lata 2009–2015, stwierdzono, że mechanizm dopasowań w obydwu krajach przebiegał w podobny sposób. Odnotowano przesunięcia krzywej, co może wskazywać na ukształtowanie się krótkookresowego punktu równowagi rynkowej. W przypadku polskiego rynku pracy na koniec badanego okresu wspomniana krzywa powróciła jednak do stanu poprzedniego, co może wskazywać na poprawę efektywności dopasowania. Celem pracy jest przedstawienie relacji miedzy stopą wakatów a stopą bezrobocia w Polsce i Portugalii oraz porównanie procesów i tendencji zachodzących w mechanizmie dopasowania popytu na pracę i podaży pracy w tych dwóch krajach.

Słowa kluczowe: rynek pracy, funkcja dopasowań, krzywa Beveridge'a

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SOCIAL MEDIA AS A JUST-IN-TIME-MARKETING--KNOWLEDGE-DIFFUSION TOOL ON THE EXAMPLE OF IT SECTOR

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Abstract. In connection withthe emergence of the concept of participatory design (also known as co-design) in the 1960s, or later concepts of crowdsourcing and community of practice (that were further consequences of the development of the aforementioned concept) attention must be drawn to the so-called social media applied by innovative companies (for example of the studied IT sector) in their holistic model of marketing knowledge management forcreation, maintenance and activation of processes of knowledge diffusion with broad group of stakeholders in real time. The paper includes an expanded version of the holistic model of marketing knowledge management that was described in previous publications of the author. It emphasised the element of social media as tools of knowledge diffusion in just-in-time system as applied by IT sector leaders both in the subsystem of knowledge diffusion of knowledge among customer and the subsystem of knowledge diffusion among cooperator.

Key words: crowdsourcing, social media, just-in-time-marketing-knowledge-diffusion, knowledge management model

INTRODUCTION

Social media have played an important role in the process of knowledge diffusion, which has been observed for example in IT sector. The purpose of this article is to identify the definitions and the place of Social Mediaand connected categories in IT business ecosystem, inselected IT leaders and their cooperators, in the area of IT holistic marketing knowledge management. This is because a broad range of SM applications andthe key position of Promoters of network relationships with IT sector are assumedin

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the model in the process of knowledge diffusion,particularly with reference to some groups of customers. In the article a critical analysis of literature is conducted in the area of studied category and qualitative method of empirical studies (case study) is applied for practical illustration of described processes and phenomena. In the initial stage of the research, promoters of systemic/networking products have been selected through the review of experiences and using the criterion of their position on Polish market. They include IBM, Intel, HP, Microsoft, and Apple. Then their network partners, especially distributors, and cooperators outside the network have been determined and sub-networks of partners have been selected. In the period between 2000 and 2015, the author regularly analysed the content of Internet webpages of selected entities and authorised press/sponsored interviews presented in IT magazines, including Computerworld, IT Manager, CIO and others.

KNOWLEDGE CO-CREATION IN COMMUNITIES OF PRACTICE

In the 1960s there occurred the concept of participatory design also known in the USA as co-designing, consisting in engagement of many entities (i.e. workers, partners, customers, consumers and society) in the process of designing of values for the purpose of its better adjustment to expectations of actual and potential recipients' [Bødker 1996]. The notion of crowdsourcing is the consequence of development of this category. It is defined as the process of acquisition of desired values through participation in the group, particularly in on-line social group in a larger degree than in traditional teams of workers or cooperators. The notion is a combination of the words crowd and outsourcing which represent the meaning of the notion that was created by Jeff Howe and Mark Robinson. In 2008 Daren C. Brabhan defined crowdsourcing as a method of on-line problem solving and a model of value creation. Enrique Estelles-Arolasand Fernando Gonzales Ladron-de-Guevara [2012] formulated its definitely more accurate definition describing crowdsourcing as a type of participating activity mostly in on-line system that consists in inviting to undertake a task, and is directed at people, institutions, organisations and companies of diversified level of knowledge in a particular area. The participation has an equivalent nature, expressed by the possibility to start working, gain knowledge and/or experience, and financial profits. Henk van Ess also draws attention to the need of feedback effect and ethical dimension of crowdsourcing, while emphasising that it is a way to solve a problem that should be available for all its co-creators [Claypole 2012].

The notions of community in action or communities of practice (CoP) emerged on these grounds. They are described as groups of entities most often connected with each other informally by common skills and interests, in a joint venture [Kimble et al. 2001]. The groups may develop naturally or they can be created intentionally in on-line form or in reality for the purpose of knowledge accumulation. This phenomenon was described for the first time by Jean Lave and Etienne Wenger in 1991. It was then defined by Wenger in 1998, as a special area of activity, a jointenterprise undertaken by its participants, constantly re-negotiated on a common ground [Clark and Brennan 1991] that is a platform of information exchange. It is a notion combining three terms: mutual

engagement, joint enterprise and shared result. Community members determine standards of creation of cooperation-based relationships through participation. These relationships connect community members in social and/or business entity. The platform of agreement enabling creation of shared resources is created through interactions between community members [Wenger 1998]. Also in further works by Wenger it is noticed that communities of practice are groups of people participating in community activity that experience constant creation of their shared identity through engagement and contributes to development of specific practice for their community [Wenger et al. 2002].

Communities of knowledge can take the traditional, real and/or virtual form. Because of virtualisation of the environment of functioning of entities, the concept of community of knowledge or communities of practitioners finds its place in the concepts of NoP (Network of Practice), OCoP (Online Community of Practice) and VCoP (Virtual Community of Practice), that are more developed in comparison with CoP.

Network of Practice is the concept created byJohn Seely Brown and Paul Duguid [2000]. It emerged on the basis of J. Lave's and E. Wenger's concept of the Community of Practice. Brown's and Duguid's concept of NoP (Network of Practice) model is called the model of fast knowledge diffusion and its assimilation in a broad environment which already suggests characteristics of application of just-in-time concept. The model refers to a group of various types of informal social relationships that favour exchange of information in virtual or electronic way. Information exchange for the purpose of execution of task/work (and not because of common interests, hobbies etc.) by entities of various professions is the reason for emergence of network. This is a distinguishing feature of NoP. Brown and Duguid [2000] describe communities of practitioners as NoP subnetworks where relationships between entities have a very close character, mainly because of also observed face to face relationships. Far more casual relationships occur between NoP entities in electronic or virtual reality [Vaast 2004]. The lack of control mechanisms resulting for example from organisational hierarchy is one of the features distinguishing NoP from working groups established in organisational structures of an enterprise/network. Their composition that can be made of several people, but also includes thousands of electronic network users, whose membership is not formally limited, is another feature of NoP. Participation in NoP is individually determined. Neither knowledge seekers nor its authors are sure about the range and durability of relationships.

Online Community of Practice (OCoP), also called Virtual Community of Practice (VCoP), is a community of practitioners developed through the Internet, but of slightly more predictable and structured character. According to the definition, in view of Lave and Wenger [2007], OCoP must include all active participants who are practitioners and experts in a particular area. The members acquire knowledge in the process of learning and through relationships with the group, which result fromsynchronic interactions [Wenger 2001]. Virtual Community of Practice provides virtual space in which people participate, without language, geographical and cultural borders [Gray 2004] – Table 1.

Their establishment by entities that aim at development of own knowledge through exchange of ideas and solutions with entities that have unique skills and key competences in a particular problem area [Gongla and Rizzuto 2001] that constitutes their internal and/ /or close environment, is a characteristic feature of all communities of knowledge. In the case of marketing knowledge communities, special attention should be paid to customers,

Table 1. Characteristic features of community of knowledge

Feature	NoP (Network of Practice)	CoP (Communities of Practice) NoP subnetwork	OCoP/VCoP (Online Community of Practice/Virtual Community of Practice)
Type of relationship	informal non-durable uncertain indefinite scope of cooperation	Formal and/or informal, engaged, of a definite structure	predictable, structured
Goal	exchange of information for the purpose of task implementation, fast knowledge diffusion	creation of shared resources/undertakings/effects, shared identity	acquisition of knowledge through learning and relationships with the group
Entities in the structure	communities of practitioners acting in direct relationships and entering on-line relationships with other communities	entities of common or partly-common skills and interests, entering on-line and/or offline relationships	practitioners and experts in a particular area
Control mechanisms	none	standards of formation of cooperation-based relationships	partial
Form of relationships	face-to-face in communities of knowledge, on-line relationships between communities	direct and on-line relationships	on-line

Source: Own study.

competitors and cooperators, as participants and creators in communities of knowledge[1], with whom the so-called just-in-time contact is possible thanks to social media.

As it is claimed by the system creator, S. Shingo, possession of required resource (knowledge in this case) when needed, reducing time spent on its acquisition and/or diffusion, and the goal accomplishment at minimum cost result from JIT system assumptions, [1992]. Hoyt [1996] suggested implementation of the principles of JIT inventory system to business education, which in discussed case concerns knowledge diffusion. It is the

[1] Results of studies conducted by IBM in 2010 show that 95 of the so-called leading organisations in the nearest five years will focus on proximity to customers and enhancement of relationships with them, and in the case of 57% studied companies it is highly probable that they will let their workers use social media and those supporting team work. Real effects of knowledge communities for selected companies include: (1) Berlitz (USA) Corporation applies software for operating portals and network social contacts as the basis for their solutions supporting cooperation in real time. Consequently it effectively breaks the barriers in traditional communication and can create high-quality products faster. (2) Construction company VCC (the USA) equipped its project managers with IBM solution supporting team work, which significantly contributed to 40% increase in the value of new contracts over the last year. (3) Celestica (the USA), the producer of electronic components takes the opportunity to increase labour efficiency after implementation of solution supporting team work. One of such options brought savings reaching 40 million USD to Celestica Company.

method of acquisition ("pull") and diffusion ("push") of knowledge in specific time, i.e. when such a need occurs, and, what is more, thanks to interactive character and broad availability of social media, among others[2].

TECHNOLOGY TOOLS IN THE JUST-IN-TIME-MARKETING--KNOWLEDGE-DIFFUSION

Together with the emergence of Web 2.0 concept, already in 1999, knowledge management evolved towards larger significance of participation of people and entities from outside the company and outside the network of the closest cooperators. Web 2.0 website[3] allows the users to interact and cooperate in social media, asopposed to passive behaviour of people viewing the content of webpages. Increase in popularity of the notion of Web 2.0 has been observed since 2004 when during the first Web 2.0 conference, John Battelle and Tim O'Reilly described Internet users as generators of webpages content and value co-creators. It is referred to as the so-called collective intelligence. According to the concept of McAfee from 2006, this trend of evolution in knowledge management is defined as Enterprise 2.0. However there is still an on--going dispute [Lakhani and McAfee 2007] if the concept Enterprise 2.0 is a temporary fashion or if it brings real usability to the future of knowledge management [Davenport 2008]. Certainly this concept causes fundamental changes in communication between people, and companies gained a new method of cooperation with business partners and customers. QQ, Facebook, Twitter WeChat, Ozone and others are indicated as the most popular Web 2.0 services (Table 2).

It also needs to be noticed that marketing specialists perform increasingly larger role in making decisions concerning investments in IT solutions[4] that favour knowledge management. In their views, problems associated with effective use of the potential of social media in the sphere of communication with customers (43%), and more extensive application of mobile platforms (42%), among others, have the key significance for effectiveness of marketers' work. Share of 55% responding companies admit that they use modern technological solutions to collect and process information about customers effectively (Table 3). A lot of companies declare intention to increase expenditures on investments in electronic marketing channels, particularly social networks (79%), modern mobile marketing (79%) and Internet advertising (70%), within the next 12 months.

[2] Social media are a type of activity in the network based on communication of people and social networking groups in interactive way, at participation of all interested parties in broadly – accessible, public, unlimited way, without delay in time [Kazanowski 2010]. Social media application for the area of marketing started to be called Social Media Marketing [Podlaski 2011].

[3] Social networking services, blogs, wikis, video-exchange areas, hosting services, Internet applications, mashups and folksonomies are examples of Web 2.0 [O'Reilly 2005].

[4] Results of studies conducted on 91 Polish companies, at the request of Polish branch of Microsoft Company and Związek Pracodawców Branży Internetowej IAB Polska [Association of Internet Sector Employers IAB Poland] entitled *Wyzwania CMO 2014. Dokąd zmierza marketing?* [2014] [IAB Polska 2014].

Table 2. Users of social media in statistics in the world in 2014

Social media	Type	Registered users	Monthly active users	Source
Line	instant messaging	500 000 000	170 000 000	http://linecorp.com/en/press/2014/0402714
Instagram	social network	n.a.	300 000 000	http://blog.instagram.com/post/104847837897/141210-300million
Google+	social network	n.a.	300 000 000	http://googleblog.blogspot.it/2013/10/google-hangouts-and-photos-save-some.html
Twitter	social network	n.a.	316 000 000	http://files.shareholder.com/downloads/AMDA-2F526X/0x0x841607/E35857E7-8984-48C1-A33B-15B62F72A0F7/2015_Q2_Earnings_press_release.pdf
WeChat	instant messaging	n.a.	600 000 000	http://www.tencent.com/en-us/content/at/2015/attachments/20150812.pdf
Qzone	social network	n.a.	659 000 000	http://www.tencent.com/en-us/content/at/2015/attachments/20150812.pdf
Facebook Messenger	instant messaging	n.a.	700 000 000	http://www.forbes.com/sites/abigailtracy/2015/06/12/facebooks-messenger-app-hits-700-million-users/
Whatsapp	instant messaging	n.a.	800 000 000	https://www.facebook.com/jan.koum/posts/10153230480220011
QQ	instant messaging	n.a.	843 000 000	http://www.tencent.com/en-us/content/at/2015/attachments/20150812.pdf
Facebook	social network	n.a.	1 490 000 000	http://investor.fb.com/releasedetail.cfm?ReleaseID=924562
LinkedIn	social network	380 000 000	n.a.	https://press.linkedin.com/site-resources/news-releases/2015/linkedin-announces-second-quarter-2015-results

Source: http://vincos.it/social-media-statistics (accessed: 17.09.2015).

Table 3. Challenges facing marketing in views of respondents in the context of application of IT tools

Marketing challenges	Responses (%)
Increase in conversion of marketing activities into sales	76
Application of the potential of social media services in communication with customers	43
"Mobilisation" – application of mobile platforms in marketing activities	42
Increase in activity in online channel	42
Integration of activities conducted in traditional and electronic channels	40
Establishment of relationships with customer communities and their engagement in innovation processes	34
Implementation of solutions allowing for providing measurements of marketing effectiveness	29
Implementation of solutions automating marketing activities (marketing automation)	28
Integration of information about marketing activities with customer databases	19
Acquisition of competences in the sphere of electronic channels and analytics within marketing team	17
Streamlining cooperation with external suppliers and agencies	14
Improvement of quality of communication inside organisation	12

Source: Wyzwania CMO 2014. Dokąd zmierza marketing?" [CMO challenges. Where is marketing going?] [IAB Polska 2014].

Furthermore, modern channels of marketing communication are located on top of priority investment list – digital channels[5] are the first seven marketing channels that the planned investments concern (Table 4).

Table 4. Application of social media in companies

Scope of the study	Poland			USA, WB, Canada, Australia	World	Europe
Source	Connect – *Social Enterprise 2012 Report*		Deloitte – *Social networking Business 2012*	Social Media Examiner 2013	Livefyre 2013	Eurocom Worldwide 2012
Portal name	% of studied companies that have their profile in particular SM		% of studied companies present in SM	% of studied companies present in SM	% of studied companies present in SM	% of studied IT companies present in SM
	of the total	of those that have a profile on SM				
Facebook	35	97	86	92	93.4	64
You Tube	15	42	38	56	59.9	56
Twitter	7	19	18	80	93.4	67
Google+	6	17	23	42	53.9	–
GoldenLine	3	8	20	–	–	–
Nk	3	8	10	–	–	–
LinkedIn	2	6	30	70	59.9	73
Blog (corporate)	2	6	15	58	–	39
Pinterest	–	–	–	41	38.5	–
Foursquare	–	–	–	11	–	–
Total	36		–	97	–	–
Respondents	company workers		marketing experts	marketing experts	company representatives	managers and supervisors of IT companies
Sample size	200		71	n.d.	182	286

Source: Own case study on the basis What IT does marketing invest in? [IT Manager 2014].

Generally such a situation allows for formulating conclusions about large significance, awareness of this significance, with reference to management of knowledge, also the marketing one, with the use of IT tools, including social media.

[5] Over 1.1 thousand marketing specialists of various levels, starting from managers of marketing departments and people making key decisions, through management of middle level and ordinary workers representing enterprises operating in nine key economy sectors of 19 European countries, including Poland took part in the study *What IT does marketing invest in?* [IT Manager 2014].

SOCIAL MEDIA IN HOLISTIC MODEL OF MARKETING KNOWLEDGE MANAGEMENT IN ENTITIES OF IT SECTOR

Holistic Model of Marketing Knowledge Management[6] identified in IT sector research is a structure composed of three major subsystems of knowledge marketing: subsystem of competences inside organisation and inside network, knowledge of competitor and cooperator, and the subsystem of customer/user subsystem. According to Demerest's, the model is characterised by social context and concerns social interactions that provide the model with its open nature. Each of the subsystems constitutes a set of procedures, infrastructure, technical and managerial tools started for the purpose of creation, sharing and development of knowledge resources. All three subsystems consist in social interactions repeated in more or less controlled way in some cases and based on knowledge transfers in specific communities of practice (Fig.).

In the diagnosed holistic model of marketing knowledge management social media are tools of implementation of the process of knowledge diffusion by leaders of IT products sector both in the subsystem of relationships with customer and the competitor. Activities in this sphere are expressed in multiplicity of forms and methods of knowledge diffusion in social media, such as blogs and communities[7]. There are forums and discussion groups, geolocalisers, microb-blogs, opinion services, price comparison websites, portals and corporate services. Benefits resulting from participation in community of knowledge

[6] More on this subject in the author's publications [Sztangret 2014, 2015a, b].

[7] For example: 1/147 specialist communities, e.g. IBM PureData-Enzee Community, IBM PartnerWorld Community, Industry Solutions Business Partner Community, IBM Security Community, IBM Asset and Facilities Management Community, IBM Cloud Computing community, IBM Software Community, The Worldwide IBM InfoSphere Community, IBM Service Management community, The Worldwide IBM ECM Community, ICS Business Partner Community Middle East and North Africa Business Partner Community, IBM Solutions for Smart Business, Nordic IBM Managed Service Providers Community, IBM Energy Management Community, Worldwide Websphere Business Partners Community; 2 Apple Support Communities, 63 Glocal Mac User Group/ /knowledge communities (Austrian Macintosh Online Community, Mac OS Mailing Environment, Internet Only Macintosh Users Group, MacAttorney, University of Chicago Macintosh User Group, The Macintosh Guild, History and Macintosh Society, MacLaw, Digital Video Professionals Association, Apple Online Junkyard, American Airlines MUG, Apple League, Boston BBS of Virtual Harbor, JeuxMac.com, Fielding Institute Mac User Group, GUM-BCN (Macintosh de Barcelona), InterMactivity, PowerSchool Users Group, PlanetMUG, AUG Luxembourg, Macintosh News and Information, MacFreak® Interactive, Club Mac-Net Puerto Rico, Est. 1998, Mac User Group Long Island, MacSverige, iMacChat, MacCommunity, Billpalmer.net Macintosh User Group, Mac Mentor – Internet Mac Users Group, Spymac User Group, A2Central.com, Virtual Mac, PinoyMac.org, Maclist.net, The Different District, MUGnetwork.com, MacCoil, Grupo de Usuarioen Linea Infomac, BBR All Things Macintosh, MacInsider, Christian Macintosh Users Group, International Internet Mac User Group, Iranian Mac User Group, Spider-Mac Apple User Group Italia, Worlwide/Philippines Mac User Group, Mac Owners Support Group, Logic Users Group, MacForum – Comunitatear Mac, The Apple Groups Team, Team MacOS X, MAC1, GentleMac, Final Cut Pro User Group Sweden, Mac uporabnikiSlovenije, ElmaSuyu, MacMap, Thessaloniki Mac User Community, Louisiana Cajun Cutters, Aperture Users Professional Network, Mac User Group Argentina, apple.spot.ee, MacLife.gr Greece, Macanudos).

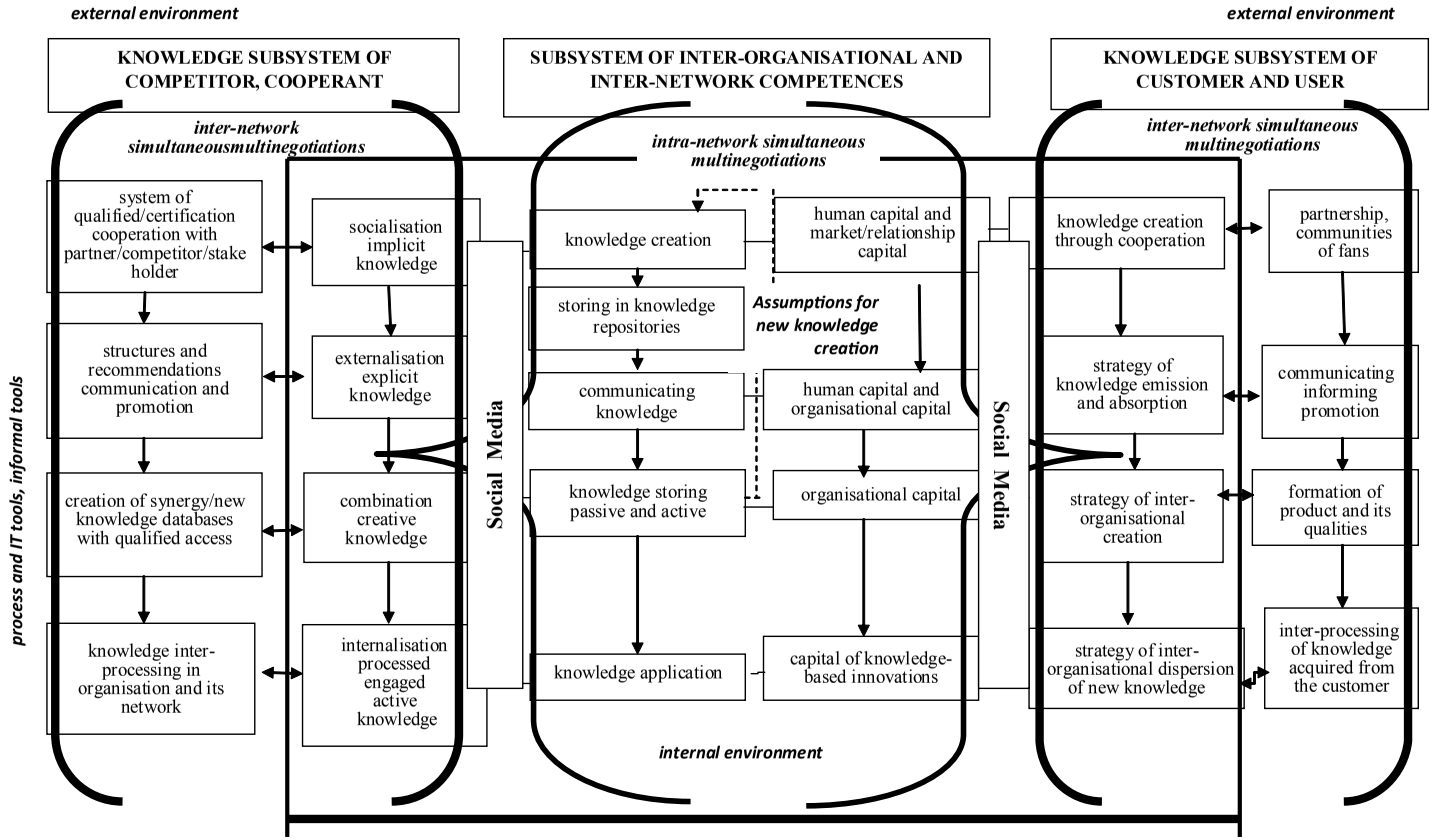

Fig. Social media in open holistic model of knowledge management in knowledge community in hypermedia environment of IT sector entities

Source: Own case study.

also have a mutual nature (Table 5). Benefits resulting from application of social media include those of economic, financial, but also of image-related, sales-related, communicative and competitive character among others. There is also a group of IT companies that are sceptical about application of at least some social media as communication tools. They indicate too large time engagement in running a blog (39% respondents) as the main reason why they do not apply corporate blogs as a communication tool. Almost a third of them (32%) stated that they do not see any benefits of blogging for their corporations [Eurocomworldwide 2013].

Table 5. Benefitsresulting from participation in social media by subsystems

Subsystem of firm and co-operant knowledge community	Subsystem of customer knowledge community
Reduction of risk of wrong decisions	
Access to customers' knowledge about the company and its offer	Access to knowledge of other customers
Immediate reaction to market needs	Immediate satisfaction of needs of market innovator
Reduction of costs of customers' acquisition and increase in the sales	Relatively simple and cheap method of acquisition of information about the company and product
Formation of own community of opinion leaders	Feeling of belonging to the group
Exposition of the range of values in virtualised way	Access to broad range of values in virtualised way
Information about demand on specific technological	Access to technological knowledge
Recruitment	Workplaces consistent with interests
Improvement in quality	Influence on product quality and parameters / / co-creation
Establishment of awareness and position through making customer satisfied	Greater probability of customer satisfaction
Protection of reputation in crisis situation	Current contact in crisis situation
Access to knowledge about competitor	Possibility to compare offers

Source: Own case study on the basis of opinions of Studied IT leaders and others [*How IT Professionals…* 2010, Deloitte 2013 *Why It Takes…* 2015, Anggono 2015].

CONCLUSIONS

Social media are an important instrument of knowledge diffusion applied by companies in domestic and global dimension, including companies of studied IT sector. It is a way of implementation of the concept of participatory design with an active role of cooperator and customer who are the entities of just-in-time knowledge transfer while participating in communities of knowledge in social media. All studied entities, the leaders of IT sector are creators and participants in such communities also beside other entities of this sector. Apart from several sceptical opinions, multitude of benefits resulting from this method of implementation of knowledge diffusion in both subsystems of holistic model of marketing knowledge management in opinions of studied entities must be emphasised.

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MEDIA SPOŁECZNOŚCIOWE JAKO NARZĘDZIE JUST-IN-TIME-MARKETING-KNOWLEDGE-DIFFUSION NA PRZYKŁADZIE SEKTORA IT

Streszczenie. W kontekście rozważań nad powstałą w latach 60. ubiegłego wieku koncepcją participatory design (znaną również jako co-design) czy późniejszymi koncepcjami crowdsourcing i community of practice (będącymi konsekwencjami ewolucji powyższej) na uwagę zasługują tzw. media społecznościowe wykorzystywane przez innowacyjne firmy (np. badanego sektora IT) w ich holistycznym modelu zarządzania wiedzą marketingową dla stworzenia, podtrzymania i aktywizacji procesów dyfuzji wiedzy w czasie rzeczywistym, z szerokim gronem interesariuszy. Artykuł zawiera uszczegółowioną wersję holistycznego modelu zarządzania wiedzą marketingową, opisanego we wcześniejszych publikacjach au-

torki, z wyeksponowanym elementem mediów społecznościowych jako narzędzia dyfuzji wiedzy w systemie just-in-time, stosowanego przez liderów sektora IT zarówno w podsystemie dyfuzji wiedzy z klientem, jak i podsystemie dyfuzji wiedzy z kooperantem.

Słowa kluczowe: crowdsourcing, media społecznościowe, just-in-time-marketing-knowledge-diffusion, model zarządzaniawiedzą

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BREXIT RELATED UNCERTAINTY FOR UNITED KINGDOM ECONOMY

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Abstract. The aim of research is to present economic and financial uncertainty related to Britain's exit from the European Union (EU). Paper discusses and analyses the pre-referendum characteristics of Brexit, the problem of growing uncertainty and its impact on British financial markets and the economy of the United Kingdom (UK), and possible scenarios of future UK–EU relationship. Post-referendum Economic Policy Uncertainty Index (EPU) levels indicate growing uncertainty in British economy. The most evident pro-Brexit voting effect was a substantial depreciation of British pound (GBP). Economic forecasts indicate negative impact of Britain's withdrawing from the EU on gross domestic product (GDP) growth rate in 2016–2020. The most likely scenario for post-Brexit UK–EU relationship is going to be a "hard Brexit".

Key words: Brexit, Economic Policy Uncertainty, economy of the United Kingdom, British pound

INTRODUCTION

The referendum results about Britain leaving EU membership has shocked an economic and political opinion. British citizens decided to cut long-term relationship with European Community on 23 June 2016. Voting results have caused the growth of uncertainty about future of Britain's economy standing. According to economists it would lead to a massive economic disruption [*What is Brexit*... 2016]. The fear of Brexit has caused a turmoil in financial markets, namely it has resulted in an increased stock market and exchange rate volatility. Brexit is considered as a crucial, hot and central issue in 2016 economic discussion. As many as 146 million Google search results indicates the importance of the analysed problem. The presented issue should be considered as a part of the

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new institutional economics theory. The matter of Brexit might be explained in the terms of such phenomenon as free-riding effect and club theory.

The aim of research is to present economic and financial uncertainty related to Britain's exit from the EU. The paper is organized as follows: section 2 discusses the pre-referendum characteristics of Brexit, section 3 presents economic and financial uncertainty about British economy, section 4 explains uncertainty related to post-Brexit UK-EU relationship, and section 5 presents conclusions.

BREXIT – PRE-REFERENDUM CHARACTERISTICS

Brexit stands for Britain exit from the EU. The term appeared on the model of Grexit, a term which had been coined few months earlier in February 2012 by two economists Willem Buiter and Ebrahim Rahbari [2012]. They presented the analysis about potential risks of Greek exit from the eurozone. Peter Wilding, in his Euroactiv blog, used the term Brexit for the first time [*Stumbling towards the Brexit* 2012]. The term Bremain stands for Britain and remain.

David Cameron, former British prime minister, in his speech of 23 January 2013 became the first prime minister since Harold Wilson, in 1974, to commit to holding an in/out referendum on the Britain's membership in the EU. David Cameron publicly set out the areas in which he wished to renegotiate the terms of EU membership in November 2015. Then came a period of an intensive negotiation between UK and EU representatives. On 20 February 2016 (after European Council meeting) Prime Minister Cameron declared the achievement of his objectives for a new settlement and announced the date of referendum – 23 June 2016 [Whitman 2016]. The UK has voted to leave the EU by 52 to 48%. English and Welsh citizens voted to leave, while the Scots wanted to remain the EU [*EU Referendum Results…* 2016]. In October 2016 the prime minister Theresa May announced to trigger Article 50 of the Lisbon Treaty till the end of March 2017 [*Theresa May kicks off…* 2016]. Article 50 describes the mechanics of withdrawing the EU by any member state [Consolidated Version of The Treaty on European Union 2012].

The United Kingdom being EU member state since 1973 has always been something of an "inside-outsider" that keeps the distance [Vojtíšková 2014]. Britons place greater importance to the Crown than to EU membership. Table 1 presents arguments of Brexiters (people who were in favour of the UK withdrawing from the EU) and Bremainers (people who were in favour of the UK remaining in the EU).

Referendum campaign postulates were divided into five sections related to fiscal, trade, migration, legal and political issues. The arguments in favour and against Brexit which are presented in Table 1 can be considered as rationale. However, from the economic point of view Bremainers' postulates were more understandable and worth considering.

It should be stressed that the Brexit process is connected with the new political economy aspects. According to Besley and Burgess [2002], the determinants of government responsiveness to its citizens are a key issue in political economy. It means that a near future of Britain's exit from the EU stays in the hands of politicians not economists. That is why political figures opinions are extremely important. Table 2 contains a depiction of pre-referendum politicians' arguments supporting Bremain or Brexit.

Table 1. Arguments for and against Brexit, according to the national campaign in the UK

Bremainers arguments	Brexiters arguments
Budget	
Britain pays the EU 340 GBP yearly per household, compared with an estimated 3,000 GBP a year benefit of membership. Staying in or out, payment is needed to access the single market.	Britain will stop sending 350 million GBP to the EU every week. The money can be spent in other way (scientific research, new industries).
Trade	
Britain avoids exporter tariffs and red tape, important as 45% of British exports go to the EU. As the EU member, Britain obtains better trade terms because of the EU size.	Britain will negotiate a new relationship with the EU without being bound by European law. It will secure trade deals with other important partners (China, India, USA, Canada).
Immigration	
Leaving the EU Britain will not solve immigration problem. Countries that trade with the EU from outside observe higher rates of immigration.	Britain can change the system that offers an open door to the EU and blocks non-EU immigrants.
Regulation	
Most EU regulation collapses 28 national standards into one EU standard, reducing red tape and benefiting business. Staying in, Britain can fight for more suitable regulation.	Leaving the EU Britain will return control over areas like employment, law, health and safety.
Influence	
At international summits, Britain is represented both by the foreign secretary and the EU high representatives.	Britain has little influence within the EU. Staying out, it can retake seats on international institutions and be a stronger influence for free trade and cooperation.

Source: Own elaboration based on [*A background guide to 'Brexit'*… 2016].

Table 2. Important political figures supporting Bremain or Brexit before UK referendum

Supporting Bremain	
Barrack Obama, American president – "The US and the world need your outsized influence to continue – including within Europe."	David Cameron, British prime minister – "To be in a reformed European Union… would be the best of both worlds".
Shinzo Abe, Japanese prime minister – "A vote to leave would make the UK a less arttractive destination for Japanese investment."	Christine Lagarde, IMF executive director – "We have looked at all the scenarios. We have done our homework and we haven't found anything positive to say about a Brexit vote."
Hillary Clinton, Democratic Party candidate for US president position – "Hillary Clinton believes that transatlantic cooperation is essential, and that cooperation is strongest when Europe is united."	Malcolm Turnbull, Australian prime minister – "From our point of view, it is an unalloyed plus for Britain to remain in the EU."
Angela Merkel, German chancellor – "I…would hope and wish for the UK to stay part and parcel of the EU."	Roberto Azevedo, WTO director general – "Britain would face tortuous trade talks in event of Brexit."
Supporting Brexit	
Boris Johnson, British ministry of foreign affairs – "Napoleon, Hitler, various people tried this out, and it ends tragically. The EU is an attempt to do this by different methods."	Donald Trump, Republican candidate for the American presidency – "I know Great Britain very well… I would say they're better off without it."

Source: Own elaboration based on desk research [Briefing Brexit 2016, *Hillary Clinton warns*… 2016, *Lagarde says Brexit*… 2016, *WTO*… 2016].

During pre-referendum period key politicians commented on potential UK withdrawing from the EU. Desk research indicates that majority of international political decision makers were strong Bremain supporters. They stressed negative aspects of Brexit not only from the UK but also from their national perspective.

ECONOMIC AND FINANCIAL UNCERTAINTY ABOUT BRITISH ECONOMY

The threat of post-Brexit economic downturn brought about the increase in stock market and exchange rate volatility. In the face of extremely hard predictions concerning the impact of Brexit on the economic outlook, the problem of huge uncertainty arises. In order to depict the uncertainty of Brexit, the Economic Policy Uncertainty Index (EPU) was applied. The EPU was developed by Baker et al. [2015]. It is built on the basis of month-by-month searches of articles from top business and economic British press that contain such terms as: uncertainty, uncertain, economy, economic, business, commerce, industry, tax, policy, regulations, Bank of England, deficit, budget etc.

Figure 1 presents monthly Economic Policy Uncertainty Index for the United Kingdom. Higher level of uncertainty is related to higher value of EPU Index.

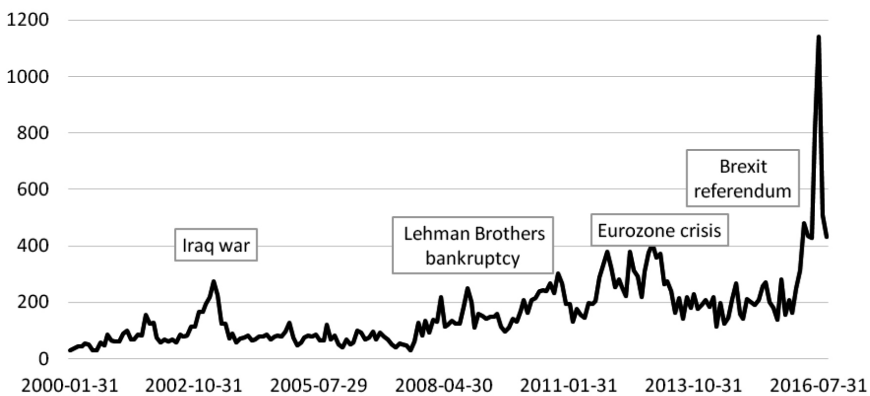

Fig. 1. Economic Policy Uncertainty Index for United Kingdom

Source: Own elaboration based on data from the Economic Policy Uncertainty (https://www.policyuncertainty.com).

Figure 1 shows a few clear spikes that have been observed since January 2000. In the beginning of 2003 EPU Index exceeded the level 200 as an invasion of Iraq result. Moreover, higher uncertainty was observed during the global financial crisis and the eurozone crisis (2008–2012 period). However, none of the above mentioned periods did not generate as high EPU index score as the UK Brexit referendum results. Since 23 June 2016 the EPU Index has trebled its value, reaching the level 1,142 in July 2016. It is worth emphasizing that such high levels of uncertainty in the UK economy may hurt the pace of economic growth, leading to an increase in precautionary savings and postponed investments decisions. Plakandaras et al. [2016] stressed the fact that huge uncertainty caused by Brexit has been the main reason of extremely deep depreciation of British

currency. Figure 2 shows USD/GBP exchange rate volatility in the period from January 1990 to October 2016.

Figure 2 shows that, in post-referendum period, the sterling plunged the depths it had reached: after the speculative attack on British currency led by George Soros in 1992 [more details: Krugman et al. 1999, Marsh 2002, Truman 2002], after invasion of Iraq in 2003 and during financial crisis in 2008–2009. A huge intraday drop of GBP against USD was observed on 24 June 2016, in the wake of Britain's voting to leave the EU. GBP lost as much as 11.1%. The currency hit the bottom again after Theresa May's declaration of moving towards a "hard Brexit" (an absolute Britain's living form the EU and the single market). USD/GBP exchange rate plumbed then by 6.1%, reaching a record low level [*May warned*... 2016]. Taking into account the level of depreciation, the Economist (an economic weekly) compares the sterling to some shaky currencies, namely Nigerian naira, Azerbaijani new manat or Malawian kwacha [Sterling 2016]. In author's opinion further British pound weaknesses may force Bank of England to intervene.

Table 3 presents the forecast for USD/GBP exchange rate. Descriptive statistics were estimated on the basis of forecasts built by leading financial institutions, namely: Westpac Banking, Credit Suisse Group, JPMorgan Chase, Rand Merchant Bank, Barclays, Maybank Singapore, Norddeutsche Landesbank, and Standard Chatered.

Table 3 contains pre- and after-Brexit referendum forecasts on USD/GBP exchange rate. In pre-referendum period, British currency was expected to become stronger both in a short- and long-term perspective. In post-referendum period, the analysed forecasts changed dramatically. However, the biggest differences in predictions (12–16%) were observed for short-term forecasts. Imparity was significantly smaller in 3–4 years ahead forecasts. It suggests that in long-term perspective (2019–2020) British currency should recover its losses.

It is believed that exchange rate level is closely connected to financial market standing. The result of Britain's referendum caught financial market by surprise. The immediate aftermath (only two-week-long period) British equity prices declined. In post-

Fig. 2. Exchange rate of USD/GBP volatility in the period 01.01.1990–13.10.2016

Source: Own elaboration based on the data from Bloomberg.

Table 3. Leading financial institutions forecasts on USD/GBP exchange rate (%)

Descriptive statistics	Time of forecast	Q3 2016	Q4 2016	2017	2018	2019	2020
Median	before referendum	1.47	1.48	1.51	1.57	1.57	1.59
	after referendum	1.26	1.30	1.34	1.41	1.50	1.57
	change	–14.29	–11.86	–11.26	–10.19	–4.46	–1.26
Mean	before referendum	1.48	1.48	1.51	1.56	1.57	1.57
	after referendum	1.26	1.26	1.34	1.43	1.50	1.55
	change	–15.27	–14.39	–11.27	–8.18	–4.39	–1.43
High	before referendum	1.59	1.57	1.6	1.63	1.65	1.68
	after referendum	1.32	1.31	1.58	1.54	1.58	1.64
	change	–16.98	–16.56	–1.25	–5.52	–4.24	–2.38
Low	before referendum	1.38	1.37	1.40	1.41	1.41	1.40
	after referendum	1.19	1.18	1.18	1.35	1.41	1.40
	change	–13.77	–13.87	–15.71	–4.26	0.00	0.00

Source: Own calculations based on Bloomberg data (https://www.bloomberg.com/europe).

-referendum period, UK markets observed the negative relationship between the value of British currency and the level of FTSE 100 Index (a leading share index listed on London Stock Exchange – LSE). Figure 3 indicates a declining trend in USD/GBP exchange rate level, and a corresponding increasing trend share value in LSE market. Time series data covered the period from 01.06.2016 till 13.10.2016. The reference base date (1 June 2016) for both indices had an index number of 100.

There is one main reason which explains the presented relationship (Fig. 3). It is worth mentioning that FTSE 100 composition is mostly based on global companies. Since the majority of that firms' earnings come from overseas, current British currency depreciation should be treated as positive factor for their businesses. Nonetheless, the relationship between LSE shares market and British pound value cannot be considered as a clear-cut one.

Jamie Dimon and James Gorman, chief executives of two leading Wall Street banks (namely JP Morgan Chase and Morgan Stanley), are going to be more likely to head for New York than any eurozone place if they move out of London City. They recognize Brexit as a turning point for a wider financial and economic crisis in all European Union countries. According to J. Gorman, in case of Brexit the big winner would be New York [*Wall Street bosses…* 2016].

From the macroeconomic perspective, Britain's Brexit referendum caused a significant increase in economic, political and social uncertainty which is expected to have negative impact on the national economy. July 2016 International Monetary Fund (IMF) forecasts presented in World Economic Outlook Update indicated GDP growth rate decrease in comparison to April 2016 projections (0.2 and 0.9 percentage point in 2016 and 2017 respectively) [IMF 2016]. The most up-to-date IMF forecast (October 2016)

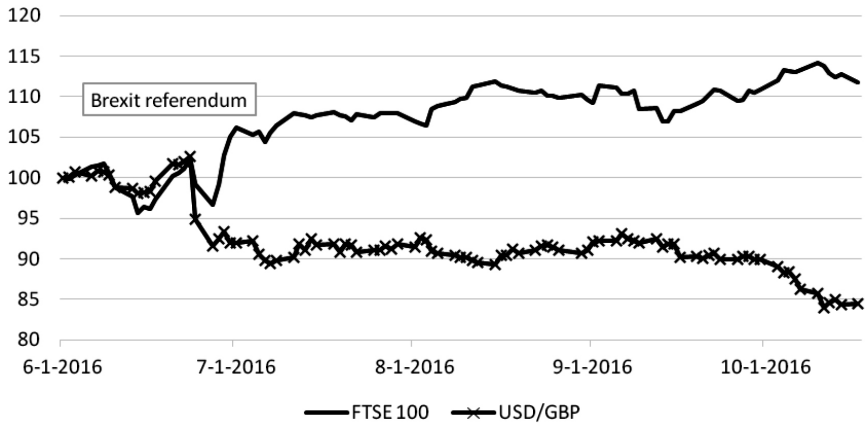

Fig. 3. Exchange rate of USD/GBP and FTSE 100 share index volatility in post-referendum period (1 June 2016 = 100)

Source: Own elaboration based on the data from Bloomberg (https://www.bloomberg.com/europe).

indicated that British economy would grow by 1.8% in 2016, up from the 1.7% it had forecasted in July. However, IMF shaved its expectations for 2017 GDP growth rate to 1.1%, from 1.3% it had projected in July 2016 [*Austerity lite* 2016].

It is worth emphasizing that according to 88% of British top economists working across universities, the City, industry, small businesses and the public sector (members of the Royal Economic Society and the Society of Business Economists), Brexit would damage Britain's economic growth prospects over the period 2016–2020. Exactly 68% of respondents thought that Brexit would increase the risk of a serious negative shock in British economy. Only 5% of responders claimed that there probably would be a positive impact of an exit from the EU and the single market. As many as 82% of the economists predicted a negative impact on household incomes. Exactly 61% of responders forecasted that Brexit would cause the unemployment rate rise. The economists indicated "loss of access to the single market" (67%) and "increased uncertainty leading to reduced investment" (66%) as two main negative Brexit effects [*Economists' Views on Brexit 2016*, *Economists overwhelmingly reject Brexit*... 2016][1].

It needs to be added that British pound's slump may hit UK living standards as a result of higher prices of imported goods and services. However, domestic prices are likely to be affected as well. Inflation rate may increase from the 0.6% level in 2016 up to 3% level in 2017 [Sterling 2016]. According to Wall Street Journal ultra-low inflation is no longer an issue for the UK. British and global financial markets observe that price pressure is mounting [*Brexit Inflation Surge*... 2016]. Moreover, the reduced integration with EU countries is likely to lower British international trade. According to Dhingra et al. [2016], it may cost UK economy far more than gains arising from the lower contribution to EU budget.

[1] The data come from a poll commissioned for the Observer, which drew responses from 639 British economists between 19 and 27 May 2016.

Future public finance standing is expected to be worse. Britain's minister of finance (precisely, Chancellor of the Exchequer), Philip Hammond, officially abandoned target of an elimination the budget deficit by 2019–2020. That ambitious goal had been gleefully presented by Hammond's predecessor, George Osbourne. According to Hammond, balanced government budget policy seems to be too constrained, as taking into account contemporary (October 2016) economic uncertainties after British voting to leave the EU [*Austerity lite* 2016]. According to Financial Times analysis, the size of UK exit bill should be close to 20 billion EUR. The precise "divorce bill" is impossible to calculate from 2016 perspective. It depends on strictly political conditions [*UK faces*... 2016].

UNCERTAIN RELATIONSHIP BETWEEN BRITAIN AND THE EU

The impact of Brexit depends on future type of relationship between Britain and the EU. The following models of above mentioned relationship were considered (Table 4). According to Global Counsel experts, the most likely models were the Swiss and FTA (Free Trading Agreement) based approaches [Global Counsel 2015].

Table 4. Potential Brexit models of UK–EU future relationship

Norwegian style – EEA agreement	The UK joins the European Economic Area and maintains full access to the single market, but must adopt EU standards and regulations with little influence over these. The UK still makes a substantial contribution to EU budget and is unable to impose immigration restrictions.
Turkish style – customs union	Internal tariff barriers are avoided, with the UK adopting many EU product market regulations, but sector coverage of the customs union is incomplete. The UK is required to implement EU external tariffs, without influence or guaranteed access to third markets.
FTA-based approach	The UK is free to agree FTAs independently and the UK's relationship with the EU is itself governed by an FTA. Tariff barriers are unlikely, but as with all FTAs the UK will need to trade off depth – which means agreeing common standards and regulation – with independence.
Swiss style – bilateral accords	The UK and the EU agree a set of bilateral accords which govern UK access to the single market in specific sectors. Concern in Brussels about cherry picking may limit the sectors. The UK becomes a follower of regulation in the sectors covered, but negotiates FTAs separately.
MFN-based approach	No need to agree common standards and regulation, but at the expense of facing the EU's common external tariff, which damages UK trade with the EU in goods as well as services. Non-tariff barriers may emerge over time to damage trade in services in particular.

Source: Based on Global Counsel [2016].

Authors claim that the most likely models of post-Brexit UK-EU relationship are going to be MFN (most-favoured-nation rules) or FTA-based approaches. Donald Tusk's (the president of the European Council) and Roberto Azevedo's (director general of WTO) opinions confirm high likelihood of "hard Brexit". According to Donald Tusk the only real alternative to a clean break from the EU is to remain a full member of the EU. Any other ideas which predict retaining benefits for Britain after its leaving the EU should be considered as a pure illusion [*"Hard Brexit"*... 2016, WTO 2016]. According

to Christine Lagarde, head of IMF, has expressed optimism that the EU should emerge from the Brexit crisis as a winner [*Lagarde says Brexit…* 2016].

Leading political figures opinions toe the economic theory of clubs. Sandler and Tschirhart maintain that "club is a voluntary group deriving mutual benefits from sharing one or more of the following: production costs, the members' characteristics, or a good characterized by excludable benefits" [Sandler and Tschirhart 1997, p. 335]. British government would like to keep the access to the European single market without EU membership, in other words benefiting without participating in costs. Such a behaviour might be perceived as a free-riding problem [more details: Pasour 1981].

CONCLUSIONS

The UK referendum results about Britain's leaving EU membership have shocked an economic and political opinion and have caused the growth of uncertainty about economy of the United Kingdom. In the UK referendum aftermath, the Economic Policy Uncertainty Index (EPU) has reached its record high levels. Majority of powerful world political leaders were against Brexit. They emphasized negative aspects of Brexit from both British and their national perspective. The most visible post-referendum effect was British Pound plunge. Exchange rate of USD/GDB decreased by more than 11% on 24 June 2016. In post-referendum period FTSE 100 index has increased. International Monetary Fund and British top economists' forecasts indicate negative impact of Brexit on future GDP growth rate. According to British government, Brexit would be one of 2019–2020 budget imbalances' reasons. The most possible scenario for future UK–EU relationship is "hard Brexit".

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BREXIT A WYSTĘPOWANIE NIEPEWNOŚCI W GOSPODARCE WIELKIEJ BRYTANII

Streszczenie. Celem badań jest przedstawienie niepewności gospodarczej i finansowej związanej z wyjściem Wielkiej Brytanii z Unii Europejskiej. W artykule scharakteryzowano zjawisko Brexitu, dokonano analizy niepewności na brytyjskim rynku finansowym oraz w gospodarce Wielkiej Brytanii oraz przedstawiono możliwe scenariusze relacji między Wielką Brytanią a Unią Europejską. Poziom indeksu niepewności polityki gospodarczej (EPU) wskazuje na występowanie wzrostu niepewności w brytyjskiej gospodarce. Silna deprecjacja brytyjskiego funta stanowi najbardziej widoczny skutek referendum z 23 czerwca 2016 roku. Prognozy ekonomiczne wskazują, że decyzja o opuszczeniu Unii Europejskiej przez Wielką Brytanię spowoduje obniżenie tempa wzrostu gospodarczego w latach 2016–2020. Analiza potencjalnych modeli relacji Wielkiej Brytanii z Unią Europejską wykazała, że najbardziej prawdopodobna jest realizacja scenariusza „twardego Brexitu" (ang. *hard Brexit*).

Słowa kluczowe: Brexit, niepewność polityki gospodarczej (EPU), gospodarka Wielkiej Brytanii, funt brytyjski

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DIRECTIONS OF UNDERTAKING ECOLOGICAL INNOVATIONS IN AGRIBUSINESS COMPANIES

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Abstract. Every agribusiness company affects the natural environment, to a smaller or larger extent. There can be no choice between the environment and economic development, therefore the agribusiness companies must adjust their development to the possibilities that the environment offers. The aim of this study is to present ecological innovations in agribusiness companies and their reference to the idea of sustainable development. Survey research was carried out among 156 agribusiness companies from Kujawsko-pomorskie Province of Poland. The only companies participating in the research were those in which some ecological investments were implemented. The research showed that the agribusiness companies consider the policy of introducing ecological investments to be very important. The companies are trying to bring into their management the strategy of eco-innovations so that they can operate with a benefit for its consumers and the natural environment. The basic types of ecological investments in the surveyed agribusiness companies include: careful waste segregation, ecological production and limiting harmful gas emission. The ecological innovations stem from the principles of sustainable development, they support the introduction of sustainable solutions in the companies, they also allow for a more efficient use of natural resources and contribute to the limitation of actions harmful to the environment while maintaining the high level of innovativeness.

Key words: agribusiness, ecological investments, sustainable development

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INTRODUCTION

The concept of stable and sustainable development came into being as a result of the occurrence of negative effects of the environment exploitation and the necessity to protect it. Hence, the agribusiness companies are facing more and more newer challenges – one of those being the possibility to introduce ecological innovations. These innovations result from the principles of sustainable development whose aim is to prevent negative impacts upon the environment, which requires social acceptance for the functioning of the companies [Zuzek and Wielewska 2015]. The idea of sustainable development will be fulfilled when the environment is protected along with the peak economic development of the company, and also when the resources are renewed in the long term. Eco-innovations lead to the acquisition and preservation of the state of sustainable development which includes not only environmental protection itself but also man's activity and relation with basic biological, chemical and physical systems leading to constant economic, cultural and technological evolution.

Within the companies, areas or fields of activity are determined by various aspects of sustainable development, i.e. integration and sustainability of different domains out of which the following must be mentioned [Pawłowski 2011]:

- natural and ecological domain (showing through environmental protection);
- technological domain (showing through new tech, saving resources);
- economic domain (showing through taxes, subsidies and other economic instruments);
- social domain (it is critical to solve the problem of unemployment in the Polish conditions);
- political domain (showing through the formulation of a sustainable development strategy, its implementation and control).

The aim of this article is to present the directions of ecological investments introduced in agribusiness companies as well as as their reference to sustainable development.

MATERIAL AND METHODS

The method applied in the research was the diagnostic survey and the technique was a survey questionnaire. Survey research was carried out among 156 agribusiness companies from Kujawsko-pomorskie Province of Poland. Both small, medium and large companies participated in the research. The study assumed that ecological investments play a key role in the introduction of the idea of sustainable development in rural areas. The choice of the research sample was intentional, as the survey questionnaire was addressed only to those companies which carried out eco-investments between 2013–2015. The questionnaire included mostly closed questions. The addresses of the questionnaire were the owners, managers or other persons responsible for environmental protection in the surveyed companies. The collected data was subject to the statistical analysis.

INNOVATIONS VERSUS ECO-INNOVATIONS

The notion of innovation was first coined and brought into the world economic literature by J.A. Schumpeter. It means a planned change (novelty) in an environment. More broadly, innovations are defined as changes whose aim is to replace previous states in a company by other states which guarantee technological progress and development. They are also characterized by improving standard in such areas of innovativeness as: products, services or even the organization itself [Berliński 2003].

Innovations are "the whole process of management, including various actions and undertakings leading to the creation, development and implementation of new values in products or new combinations of means and resources, which are a novelty to the individual who creates or introduces them" [Bujak 2011].

Furthermore, innovative activity is "the engagement of companies into various scientific, technological, organizational, financial and commercial activities, which lead or will lead to the implementation of innovations. Some of those actions are innovative, others are not a novelty but are necessary to the implementation of innovations. Innovative activity also includes research-development activity (R+D), which is not directly connected with the creation of a particular innovation" [Woźniak and Ziółkowski 2006, Roman 2013].

A company can be recognized as innovative is one "which – within the surveyed period, mostly three years – has implemented at least one technological innovation, i.e. a new or improved product or a new or improved process that is a novelty, at least from the point of view of the company" [Stawasz 2006].

According to A. Sosnowska et al. [2000], the criteria which identify an innovative company include:

1. Quantitative criteria, which include:
   - the share of new products and technologies in the annual value of the company sales;
   - the number of new products introduced in the particular year;
   - the number of new technologies introduced in the particular year;
   - the number of patents obtained in the particular year;
   - the number of research subjects being carried out;
   - the value of patents granted for research;
   - the share of research expenditure granted in the particular year in the value of the sales;
   - the share of the basic products in the world market;
   - the number of employees with a degree;
   - the percentage of employees with a degree in relation to other employee groups;
   - the number of scientific publications;
   - the number of college/university degrees acquired;
   - the number of awards received for the company's products at exhibitions and contests;
   - the number of licences sold;
   - the number of foreign licences bought and used.

2. Qualitative criteria, which include:
   - the infrastructure, including the level of scientific infrastructure equipment and the level of computerization;
   - the technologies, including the level of technology modernity, the environment-friendliness of the technology and technological and economic factors;
   - the products, including the level of product modernity, quality, its marketing merits and chances for success;
   - the staff, including the level of qualifications, achievements (college/university degrees, patents, publications), recognition of the environment and contacts overseas.

Contemporary companies must accept the need for constant change and work out mechanisms of effective management of the phenomenon. It was only recently that the environmental aspects started to be included in the group of the most important factors that compel mankind to be extra careful. Socio-economic development cannot be separated from the natural environment, and ecological (environmental) education should play a key role along with modifying the dominant system of values: changing people's way of thinking from the point of view of conqueror to the position of a partner of the natural environment [Pawul and Sobczyk 2011].

In the long term, comprehensive thinking of the challenges of environmental protection and sustainable development translates into elements of impact upon economic and environmental issues [Szpor and Śniegocki 2012], such as:

- improvements in economy efficiency in the use of available resources;
- stimulating innovativeness (eco-innovations);
- creating new markets for ecological technologies, products and services, which translates creating new job opportunities;
- increasing investors' trust thanks to predictable, long-term government policies in the field of environmental protection;
- greater economic stability resulting from the decrease in dependency on natural resource prices and budget consolidation thanks to the improvement in the efficiency of public expenditure as well as income from waste taxation;
- decreasing the risk related to the "bottle neck" effects in the field of the natural resources;
- decreasing the risk of sudden, expensive and irreversible changes caused by a breach in the balance of ecosystems.

The above assumptions give rise to the necessity to introduce ecological innovations in the agribusiness companies. Eco-investments are equalled to such expressions as: green innovations, environmental technology, green technology, technological environmental investments, eco-technologies, ecological technology, green products, green marketing or consumer-friendly products.

Eco-innovation is a novelty, which not only improves the efficiency of the natural resource usage in the economy, but also, more importantly, decreases the negative impact of man's activity upon the environment and strengthens the endurance of the economy to environmental pressures.

This implies that the eco-innovations contribute directly or indirectly to the reduction of various environmental encumbrances; besides, their introduction is primarily oriented towards reaching particular environmental efficiency [Szpor and Śniegocki 2012].

The activities of the companies which help to decrease the pressure on the natural environment and bring financial economization [KosteckaandKostecki 2006] amount to the economic aspect in:

1. Energy management:
   - determining areas of unfounded energy use;
   - analysis of bills and data from energy meters with the current activity of the company;
   - switching on all devices only in cases of justified emergency;
   - switching off any equipment operating in stand-by;
   - maintenance of thermostats regulating the temperature of hot water;
   - tightening windows and doors and installing heat-retaining curtains;
   - introduction of insulation for the hot utility water installation;
   - good technical condition of the equipment and electro-tools;
   - cleaning lamps and introducing energy-saving light bulbs and light switch sensors;
   - introduction of heat switch regulators;
   - introduction of magnetic cards which automatically switch off energy in company rooms and halls;
   - exchange of household devices for energy-saving ones.
2. Waste management:
   - determining areas in which it is possible to limit waste and to analyze its composition and quantity, in order to determine the policy of purchase (e.g. cleaning supplies, office supplies, food);
   - making purchases for the company in large and/or recyclable packaging;
   - cost analysis of the used type of packaging;
   - working out a waste recycling scheme;
   - limiting the use of packaging for hygiene products, introducing soap dispensers;
   - limiting the number of information brochures for customers, printing them on recycled paper;
   - composting organic waste at the place where they are generated;
   - "earthworm ecological box" (lower cost of waste disposal);
   - using electronic mail (lower paper consumption).
3. Water management
   - determining areas that enable water saving;
   - measurements in particular places of water consumption (e.g. washbasins, toilet cisterns);
   - water recycling where possible;
   - repairing leaky devices (e.g. taps, toilet cisterns), introducing water usage limiters (self-switching taps, infrared sensors, tap aerators);
   - collecting rain water and using it for e.g. watering greeneries;
   - application of cleaning agents which are biodegradable and phosphorus free.

In the general meaning, eco-innovations aim at: soil protection, rational water management policies in the economic aspect, protecting waters from pollution, limiting dust and pollution emission, sorting out issues of municipal economy and land use [Kozłowski 1997].

To conclude, ecological innovations support the introduction of sustainable solutions in the companies, allow for a more effective use of the natural resources and also contribute to the limitation of activities harmful to the environment while maintaining a high level of innovativeness.

RESULTS AND DISCUSSION

According to the data from the Central Statistical Office of Poland [GUS 2016], the expenditure for innovative activities was 31,094.1 million PLN in industrial companies and 12,640.6 million PLN in services (in 2014 that expenditure was 24,621.6 million and 12,995.2 million PLN respectively). Between 2013 and 2015, the innovations were introduced in 18.9% of industrial companies (0.3% increase compared to the years 2012––2014) and in 10.6% of service companies (compared to 12.3% in the years 2012–2014). New or significantly improved product or process innovations were introduced by 17.6% of industrial companies and 9.8% of service companies.

The research included 156 agribusiness companies operating in Kujawsko-pomorskie Province of Poland, in which some ecological innovations had been introduced. The survey research conducted by the author implies that eco-innovation activities are undertaken most frequently: when the entire company is being modernized (62.2%), in order to improve the company's image (66.7%), in order to improve the condition of the environment in the region (69.9%), for economic benefits arising from their implementation (39.1%), but most of all in order to lower the costs of operation (82.1%). The business people rarely indicated legislation or local authority pressure as a significant factor for undertaking action for the environment (Fig. 1).

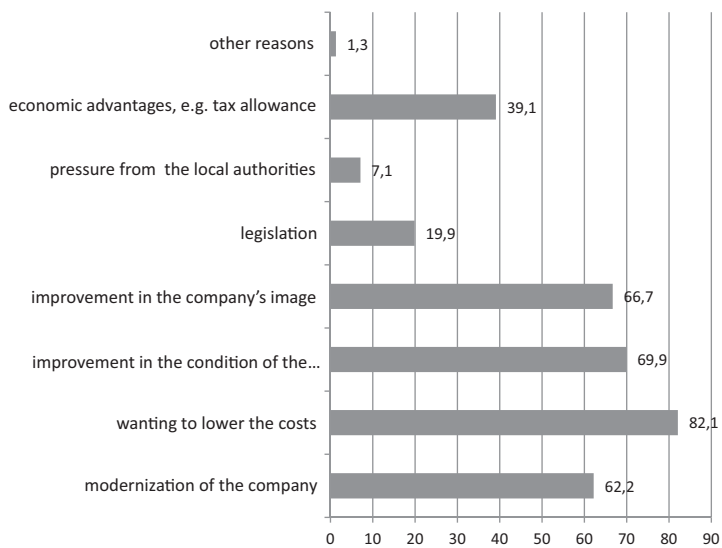

Fig. 1. Decisive factors for undertaking action for the environment in the surveyed agribusiness companies

Source: Author's own study based on research conducted.

Although Polish companies not only implement few eco-innovations, but few innovations altogether [GUS 2015], the research showed that, according to the surveyed, eco-innovations take up a high rank in the general policies of Polish agribusiness companies. This was the opinion of 94.2% of the surveyed. Two people (1.3%) were of the opposite opinion and the remaining 4.5% of the surveyed did not have an opinion in this matter. Similar results were obtained about the rank that eco-innovations take within the policy of own companies of the surveyed. As much as 87.2% of the surveyed saw ecological innovations as important – according to them, these take up a high position in the company's policy; one person (0.6%) claimed that they do not matter much; another 12.2% did not produce an opinion in this matter.

The company's policy ought to oscillate towards the production of goods in the way that is the least harmful to the consumer and the natural environment. Eco-innovations give small and medium-sized companies an opportunity to improve their images and their general presence on the market.

The research showed that the types of ecological innovations implemented in the surveyed companies are primarily: detailed segregation of waste (71.8%), ecological production (66%) and limitations in harmful gas emission (56.4%). What mattered less was media infrastructure modernization or technology line modernization (Fig. 2).

The development of eco-innovations is dependent on macroeconomic factors, institutional support, legal conditions, social expectations or relations with suppliers and customers [Zuzek 2015]. However, there are often various obstacles during the realization of those enterprises. The research showed that the surveyed agribusiness companies also encounter a number of barriers that withhold their development in the field of eco-innovations (Fig. 3).

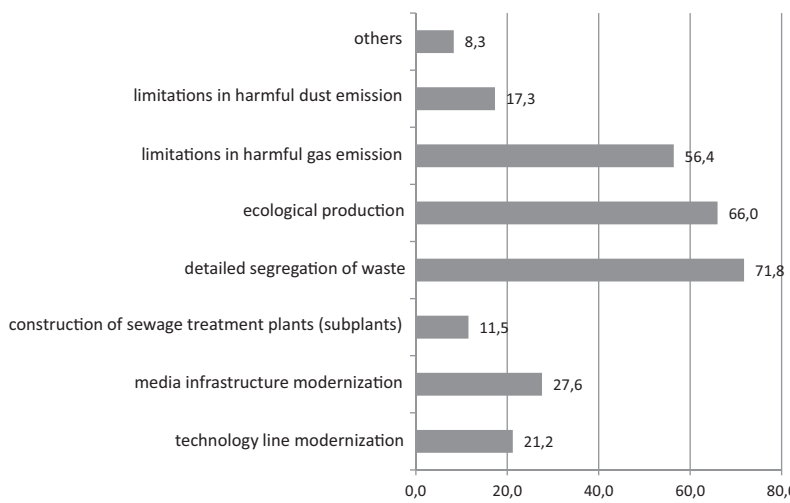

Fig. 2. Types of ecological innovations implemented in the surveyed agribusiness companies

Source: Author's own study based on research conducted.

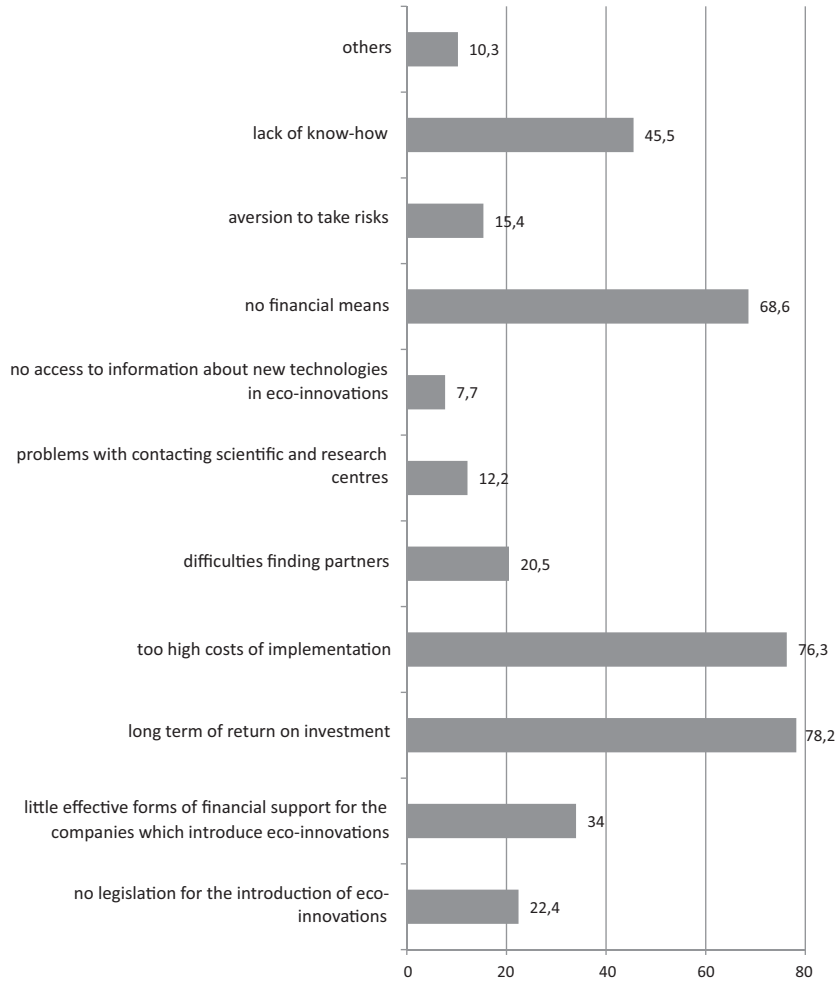

Fig. 3. Barriers in the introduction of ecological innovations in agribusiness companies, in the opinions of the surveyed

Source: Author's own study based on research conducted.

The surveyed saw the basic barriers or obstacles which obstruct the introduction of eco-innovation solutions in: long term of return on investment (78.2%), too high costs of the introduction of eco-innovations (76.3%), lack of financial means (68.6%), lack of know-how (45.5%) or ineffective forms of financial support for companies that introduce eco-innovations (34%). The financial limitations generally arise from the fact that the current economic activity of the agribusiness companies is financed from own capital which is not sufficient for innovations. The problem is also the acquisition of external sources of financing, such as loans, credits or EU funds [*Strategy of innovativeness...* 2011, Zuzek 2015].

Eco-innovations play an important role in mitigating the effects of changes in the environment caused by man – both their impact on nature and the economic system itself, so it is essential that they be constantly implemented. As much as 68.6% of the surveyed are thinking of implementing eco-innovations in the future, 16.7% do not see a perspective of their further implementation and 14.7% do not have an opinion in this matter.

In conclusion, innovations are a priority for building economic growth and social and cultural development. Eco-innovations, however, refer primarily to the companies' sustainable development.

It is clear from the Central Statistical Office of Poland research [2015] that still very few Polish companies implement innovations or eco-innovations. It is the large companies, which employ more than 249 employees, that most frequently undertake the implementation of eco-innovations. Also, it is usually the organizations that operate in industry rather than services. Although eco-innovations still have a small share in small and medium-sized companies, it is hardly possible to turn the economy "green" without them.

CONCLUSIONS

The basic condition for the implementation of any innovation is perceiving it as a potential opportunity, rather than a threat. Eco-innovations lead to acquiring maintaining the state of sustainable development, which includes not only the environmental protection, but also man's activity and relation with basic biological, chemical and physical systems leading to constant economic, cultural and technological evolution.

The following conclusions arise from the analysis of subject literature and the author's own study:

1. Each agribusiness company affects the natural environment, to a smaller or larger extent. Because of this, the companies ought to pay more attention to decreasing the use of raw materials and to optimizing the production process.
2. The surveyed agribusiness companies consider the policy of implementation of eco-innovations to be very important. The basic types of ecological investments in the surveyed agribusiness companies include: careful waste segregation, ecological production and limiting harmful gas emission.
3. The implementation of the selected ecological innovations means having to overcome a number of barriers. The surveyed concluded that the problem here is primarily the long term of return on investment, lack of know-how or financial means. In spite of this, most surveyed companies are willing to further implement ecological innovations.

It must be noted that undertaking voluntary obligations in the environmental protection is beginning to constitute an important element of the companies' strategies of development, which contributes to an increase in the pro-ecological orientation of management, thus also to an increase in competitiveness of the companies. Ecological, consumer- and environment-friendly production is conducive to the company's competitiveness on the market.

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WDRAŻANIE INNOWACJI EKOLOGICZNYCH W PRZEDSIĘBIORSTWACH AGROBIZNESU – KIERUNKI DZIAŁAŃ

Streszczenie. Każde przedsiębiorstwo agrobiznesu w mniejszym lub większym stopniu wywiera bezpośredni wpływ na środowisko naturalne. Nie może też wybierać między nim a rozwojem gospodarczym, dlatego swój rozwój musi podporządkować możliwościom, jakie to środowisko daje. Celem niniejszego opracowanie jest przedstawienie innowacji ekologicznych w przedsiębiorstwach agrobiznesu i ich odniesienie do idei zrównoważonego rozwoju. Badania sondażowe przeprowadzono wśród 156 przedsiębiorstw agrobiznesu z województwa kujawsko-pomorskiego. W badaniach uczestniczyły tylko te przedsiębiorstwa, w których realizowane były inwestycje ekologiczne. Badania wykazały, że przedsiębiorstwa agrobiznesu politykę wdrażania innowacji ekologicznych uważają za niezwykle istotną. Starają się one wprowadzać do swojej strategii zarządzania ekoinnowacje, aby produkować z pożytkiem dla konsumenta i środowiska naturalnego. Podstawowe rodza-

je innowacji ekologicznych w badanych przedsiębiorstwach agrobiznesu to: szczegółowa segregacja odpadów, produkcja ekologiczna, ograniczenie emisji szkodliwych gazów. Innowacje ekologiczne wynikają z założeń zrównoważonego rozwoju, wspierają wdrożenie zrównoważonych rozwiązań w przedsiębiorstwach, pozwalają na bardziej efektywne wykorzystanie zasobów naturalnych, a także przyczyniają się do ograniczania obciążającego środowisko oddziaływania przy równoczesnym zachowaniu wysokiego stopnia innowacyjności.

Słowa kluczowe: agrobiznes, innowacje ekologiczne, zrównoważony rozwój

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THE ETHICAL DILEMMAS IN MARKETING – THE POSITIVE IDEA AND ITS DESIRABLE AND UNDESIRABLE CONSEQUENCES

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Abstract. The article deals with the issue of intended and unintended socio-economic consequences of marketing actions. Marketing concept is a positive idea of creating value for customers and other stakeholders, but the results of marketing decisions may be both positive and negative for company's environment. The arguments for positive effects of marketing are presented, as well as the evidence for unethical marketing practices and its negative consequences. Assuming that the need to consider interests of different companies' stakeholders is increasing, the concept of stakeholder orientation, as a broadening of the market orientation, is discussed. Finally the selected modelsof ethical marketing decision-making are presented.

Key words: marketing, economic and social consequences of marketing actions, marketing ethics, company social responsibility, stakeholders, ethical decision-making

INTRODUCTION

The positive nature of marketing concept as an idea of creating value for a customer, a company and a society is inevitably undermined by the reality of the market practice. Since every marketing activity is driven by a particular individual or a group and the motives, intentions, goals, capabilitiesand cultures of these entities can differ a lot, the risk that its outcome won't benefit all the stakeholders always exists. Besides, even undoubtedly customer-oriented or socially oriented marketing strategies and programs can cause undesirable side effects of a different nature.

Under these circumstances the demand for maintaining high ethical standards in business and marketing remains constantly justifiable. Too often customers are shocked by

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news revealing blameworthy, unethical actions of global and local companies or institutions. The role of the scientific research is to notice the ethical context of marketing practices, to analyze relationships between specified marketing actions and their social and economic outcomes, to define and measure the ethical decision-making processes and to propose a framework for identifying and solving ethical problems.

MATERIAL AND METHODS

The article contains the extensive review of the literature on marketing social and economic effects, marketing ethics, unethical marketing practices and ethical decision-making. The opposite views on the influence of marketing on the economy, society, culture and natural environment are presented, as well as the concepts of positive marketing and stakeholder orientation. Finally, the Ferrell–Gresham model and the Hunt–Vitell model of ethical marketing decision-making are presented.

RESULTS AND DISCUSSION

Marketing actions, as any other business activity, apart from achieving the short-term and long-term company's objectives and goals, may also cause intended (or foreseen) and unintended (or unforeseen) economic and social effects, both positive and negative. The identification of these effects and their evaluation are the subject of scientific debate for many years [e.g. Pollay 1986, Nason 1989, Wilkie and Moore 1999, Desmond and Crane 2004, Bharadwaj et al. 2005, Kopf et al. 2011]. The positive view of marketing and its role in the economy and society has a long tradition in a marketing literature and is presented by so-called activists, who praise marketing for its contribution to the economic and social development [Drucker 1958, Savitt 1988, Bharadwaj et al. 2005].

Although the discussion on the relationship between marketing investments and economic growth shows rather that marketing doesn't cause, but only reflects changes in the economy, activists argue that its impact on the socio-economic development is evident. According to them, marketing fuels the economy by stimulating market demand, driving competition, increasing business effectiveness and efficiency, creating innovative products, disseminating new technologies and supporting employment and exports [Kopf et al. 2011, Deloitte 2013]. Accelerating the experience curve effects and the economies of scale, lowering prices andincreasing consumer's choice are often indicated as the other economic benefits of marketing activity.

The results of the research show also many positive socio-cultural outcomes of marketing actions, such as encouraging changes in social roles and behaviors, promoting social diversity, equality and tolerance, breaking social and cultural stereotypes, educating in technology and science, creating and consolidating pro-environmental and pro-health attitudes and habits or increasing demand for personalhygiene products and healthy food. Many of these phenomena are generated by companies that practice corporate social responsibility and use marketing tools to implement their socially responsible strategies [Kotler and Lee 2005, Van de Ven 2008]. Green, ecological or sustainable marketing can create environmental value [McDaniel and Rylander 1993, Peattie and Crane 2005, Fin-

ney 2012]. Cause-related marketing, despite its criticism, usually brings benefits to both the company and the designated cause [File and Prince 1998, Vanhamme et al. 2012].

Perhaps the most optimistic view of marketing influence on stakeholders is presented in the positive marketing concept, which emerged recently and is defined as "any marketing activity that creates value for the firm, its customers, and society at large" or "marketing in its ideal form" [Gopaldas 2015]. Although the logic of this concept provokes a question about "traditional marketing" (is it negative or neutral), this approach stresses the marketing responsibility for welfare of different company's stakeholders (what makes it to be an emanation of stakeholder orientation, as discussed later). Pro-social connotations situate positive marketing closely to the concepts of social, cause-related and green marketing, but its supporters clearly distinguish it from them, pointing thatit incorporates public interest, environmental protection and societal value into the core business of the company [Gopaldas 2015, Stoeckl and Leudicke 2015].

The dark side of marketing

The shift towards ethical and socially responsible marketing management is accompanied by the widespread recognition of multiple unfair and deceptive everyday practices of many manufacturers, retailers or service suppliers. These blameworthy practices, like installing devices that deliberately falsify emissions tests in the Volkswagen diesel-powered vehicles, or false and misleading advertising of Amber Gold, are symptoms of "marketing pathology", which should be prosecuted under the law and penalized. At worst, besides direct harm to consumers the marketing managers' dishonesty and malevolence can cause negative long-term effects, including distrust and suspiciousness of any marketing activity [Darke and Ritchie 2007, Xie et al. 2015].

The vast literature on marketing ethics is devoted to the negative, intended or unintended, aspects of marketing actions. A few attempts to synthesize the most important plots of marketing ethics, including controversial or unethical behaviors and actions, were made in the past [Murphy and Laczniak 1981, Tsalikis and Fritsche 1989, Gaski 1999, Schlegelmilch and Öberseder 2010].

The typical areas of marketing susceptible to the temptation to engage in unfair or deceptive practices are among others marketing research, product management, pricing, sales and personal service, customer management, marketing communications and on--line marketing [e.g. Hensel and Dubinsky 1986, Tsalikis and Fritsche 1989, Schlegelmilch and Öberseder 2010, Nguyen and Simkin 2012]. Some evidence of the marketing malpractice is presented at the Table.

Unethical companies' marketing actions can lead to persistent changes in consumers' attitudes and behavior. One of the outcomes is over-consumption or promiscuous consumption. Consumers have informal and short-lived relationships with products and brands to seek variety, so they exchange old products for the new ones without thinking of the consequences [Denegri-Knott and Molesworth 2009]. Unfortunately, over-consumption can cause stress, fatigue and disillusionment, and in a long-run it contributes to the decline of quality of life [Zavestoski 2002, Albinson et al. 2010].

According to the results of research, "advertising deception leads consumers to become defensive and broadly distrustful of further advertising claims" [Darke and Ritchie

Table. Selected unethical practices in marketing

Areas of ethical abuse	Unethical marketing practices	Examples of research
Marketing research	• researchers' dishonesty • using manipulating research techniques to produce desirable findings • gathering fictional data/falsifying research data • invasion of privacy	Frey, Kinnear 1979 Sojka, Spangenberg 1994 Kimmel, Smith 2001 Toy et al. 2001
Product management	• offering harmful or dangerous products • planned product obsolescence • arbitrary product elimination • altering the quality and size of a product to keep the price at the same level • product adulteration or imitation • misbranding practices • misleading packages	Hise, McGinnis 1975 Smith, Cooper-Martin 1997 Bone, Corey 1992, 2000 Geyskens et al. 2007 Guiltinan 2009 Buchanan et al. 2009 IMCO 2012
Pricing	• unfair and excessive pricing • predatory pricing • setting artificially high prices for products • price collusions • offering different prices for different buyers	Guiltinan, Gundlach 1996 Gaski 1999 Bolton et al. 2003 Lisa 2004 Xia et al. 2004
Sales and personal service	• pressure on salespersons to meet a sales quota • unequal treatment of customers • corrupting purchase decision makers • deceptive salespersons practices • undelivered promises of salespersons • unresponsiveness to customer complaints	Dubinsky et al. 1980 Bellizzi, Hite 1989 McClaren 2000 Belizzi, Hasty 2003 DeConinck, Thistlethwaite 2011 Schwepker, Schultz 2013
Customer management and databases	• different treatment of customers • information misuse • invasion on privacy of consumer information • collecting customer data and selling them without customers' knowledge • binding customers with contracts and confusing them • increasing hidden fees, charges and switching fees • failure to provide security of information	Keaveney 1995 Turow et al. 2005 McGovern, Moon 2007 Frow et al. 2011 Nguyen, Mutum 2012 Nguyen, Simkin 2012
Marketing communications	• deceptive or misleading advertising • intrusiveness of advertising • annoying or invasive promotions • puffery and exaggerated claims • omitting information of product's drawbacks or risks • promoting products through bribes and payoffs • using of sex-appeal, violence and provocation in advertising messages • insulting religious and national feelings • stereotyping of minorities and sex roles	Longenecker et al. 1988 DePaulo 1988 Johar 1995 Attas 1999 Andrews et al. 2000 Li et al. 2002 Darke, Ritchie 2007 Shanahan, Hopkins 2007 Xie, Boush 2011 Xie et al. 2015
On-line marketing	• customer manipulation • contacting people without their consent and spamming • intrusiveness of on-line advertising • on-line promoting and selling harmful products • social media manipulation	Castelfranchi, Tan 2002 Grazioli, Jarvenpaa 2003 Nicholls 2011 Xiao, Benbasat 2011 Brodmerkel, Carah 2013
Areas of high ethical vulnerability	• unethical marketing practices aimed at children and seniors • alcohol and tobacco advertising and sales • stimulating food overconsumption • exploitation of labor force, including child labor • creating threats for natural environment	Kilbourne, Beckmann 1998 Ramsey et al. 2007 Crane, Kazmi 2009 Argo, White 2012 Zlatevska et al. 2012 Cantrell et al. 2013

Source: Own elaboration.

2007]. Deceptive advertising can also damage brand image – consumers who realize that an ad is false or misleading, demonstrate less favorable attitude toward the brand [Andrews et al. 2000, Shanahan and Hopkins 2007, Xie et al. 2015].

Due to intensive marketing communications global companies are able to differentiate their brands to the extent that they limit competitive abilities of other firms, what in turn narrows consumers choice [Pass et al. 1994]. Marketing is held responsible for promoting materialistic and hedonistic lifestyles, instilling harmful everyday habits and consumption patterns and spoiling aesthetic tastes [Pollay 1986, Hirschman 1990, Lin 2001]. The accusations against marketing also apply to its contribution to overweight and obesity in children and adults, increasing the risk of alcohol and nicotine addiction or exploitation of labor force [Geyskens et al. 2007, Crane and Kazmi 2009, Argo and White 2012, Cantrell et al. 2013].

Market orientation versus stakeholder orientation

The need to consider interests and welfare of different groups of stakeholders in marketing actions is the essence of the stakeholder orientation (SO), proposed as a broadening of the market orientation (MO) concept [Ferrell et al. 2010]. This proposition followed the process of redefining the purpose of company management as satisfying the needs and expectations of different stakeholders, supported by the management literature [Donaldson and Preston 1995, Mitchell et al. 1997, Jawahar and McLaughlin 2001, Bazin and Ballet 2004]. Since the marketing theorists have postulated to go beyond the customer and competitor orientation for many years, they willingly adopted this approach, including e.g. suppliers, shareholders, employees, local community, society and a natural environmentin a set of company's stakeholders [Day 1994, Greenley and Foxall 1997, Matsuno and Mentzer 2000].

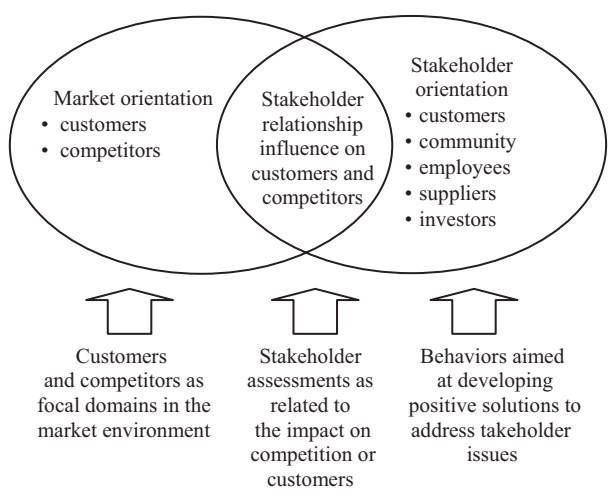

Fig. 1. Market orientation and stakeholder orientation

Source: Adopted from Ferrell et al. [2010].

The stakeholder orientation is defined as "the organizational culture and behaviors that induce organizational members to be continuously aware of and proactively act on a variety of stakeholder issues" [Ferrell et al. 2010], where "stakeholder issues" are e.g. product safety, fairness of marketing communications or environmental effects of production processes [Maignan and Ferrell 2004, Ferrell et al. 2010]. In contrast to market orientation, SO doesn't focus only on customers' needs and competitors' actions but shows concern to all the stakeholders, although their relative weight depends on the issue and its context. The market oriented companies also recognize the importance of different forces in their environment, but usually only to the extent to which they influence customers and competitors behavior [Jaworski and Kohli 1993, Deshpandé and Farley 1998, Matsuno and Mentzer 2000]. This means that market orientation and stakeholder orientation are partly exclusive, with an overlap between them (Fig. 1).

Incorporating SO into the marketing management is a challenge as the needs of different groups of stakeholders can be contradictory. Moreover, MO is generally focused on firm's profitability, while SO requires balancing and coordinating efforts to improve the welfare of all stakeholders. It implies that creating and implementing marketing strategy aimed at customers, employees, local community or society in order to satisfy their needs may be very difficult. On the other hand, the results of some research show positive relationship between market oriented behaviors and responsible corporate behaviors toward employees, customers, and the community [Maignan et al. 1999, Maignan and Ferrell 2004, Ferrell et al. 2010].

Models of ethical marketing decision-making

Looking for high ethical standards as the clues for company's behavior which benefits all the stakeholders, it's advantageous to start by understanding how ethical or unethical marketing decisions are made. The explanation of the mechanism of ethical (or non-ethical) marketing decision-making have been the subject of conceptual work since the 1960s. As a result a bunch of less or more comprehensive models of ethical decision--making in business and marketing were developed [Bartels 1967, Cavanagh et al. 1981, Ferrell and Gresham 1985, Trevino 1986, Bommer et al.1987, Hunt and Vitell 1986, 1993, Mascarenhas 1995, Dunfee et al. 1999, Sparks and Pan 2010]. Two of them, the Ferrell–Gresham model and the Hunt–Vitell model, are briefly discussed below.

In the Ferrell–Gresham model (Fig. 2) the process of ethical judgment of organization's marketing decisions is multidimensional and contingent in nature. The contingency approach to decision making means that this process is dependent on various individual and organizational factors which influence individuals resolving ethical issues. Individual factors include knowledge, values, attitude, and intentions of the decision maker, and organizational factors include significant others and opportunity factors. The social and cultural environment is treated in this framework as a source of criteria for defining ethical issues. The outcome of the decision-making process is a specified organization's behavior evaluated as ethical or unethical [Ferrell and Gresham 1985, Ferrell et al. 2013].

The cultural values influencing individual decision-making process are usually derived from moral philosophy. The philosophical assumptions about ethics can be teleological or deontological, so they can stress the consequences of company's behavior or the

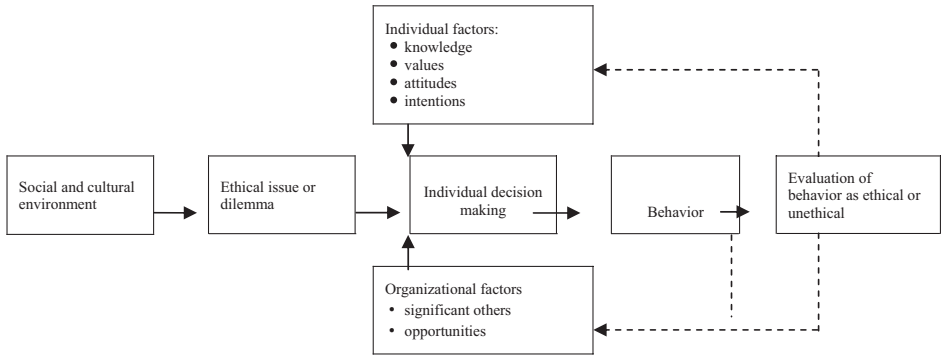

Fig. 2. The Ferrell–Gresham contingency model of ethical decision-making

Source: Adopted from Ferrell and Gresham [1985]; Ferrell et al. [2013].

intentions behind it. The standards to judge a company and its marketing activity may be developed from utilitarianism (teleological approach), justice principles and rights principles (deontological approach). The attitudes and intentions of an individual result from his or hers socialization processes [Ferrell and Gresham 1985, Ferrell et al. 2013].

The ethical judgment is also influenced by the organizational factors creating a pressure on an individual. The influence of significant others, i.e. other persons being members of different social groups, guided by distinct norms and values, can be described with help of differential association theory and role-set theory. According to the differential association theory an individual's behavior and ability to judge the behavior as ethical or unethical may result from interactions with other persons, e.g. peers, friends or supervisors. The role-set theory assumes that behavior or judgment depends on an individual's social status in the organization. Opportunities, as the second group of organizational factors, refer to the chance of ethical or unethical decision making, which results fromthe conditions created in a company. The conditions determining ethical behavior include the existence of professional codes of ethics, ethics related corporate policy and the system of rewards and punishments for unethical behavior [Ferrell and Gresham 1985, Ferrell et al. 2013].

The Hunt–Vitell model (Fig. 3) concentrates on the process of evaluation of the alternative marketing actions from both deontological and teleological point of view. Deontological evaluation focuses on the intentions or behavior of the marketing decision makers and their consistency with ethical norms, moral imperatives and personal values. On the other hand, teleological assessment takes into account the forecasted consequences of a company's decisions on consumers, employees, management, society and other entities, as well as probability, desirability (or undesirability) and relative importance of these consequences. Using this approach the outcome of alternative intentions or actions is examined to determine which one of them brings the most benefits to all the stakeholders [Hunt and Vitell 1986, 1992, Vermillion et al. 1993, Lassar and Winsor 2002, Ferrell et al. 2013].

The Ferrell–Gresham model and the Hunt–Vitell model offer a comprehensive framework for understanding the way the ethical or unethical decisions are made. Despite some criticism, these approaches were supported by the findings of research. Mayo and Marks [1990] empirically confirmed the models' assumption that both teleological and deonto-

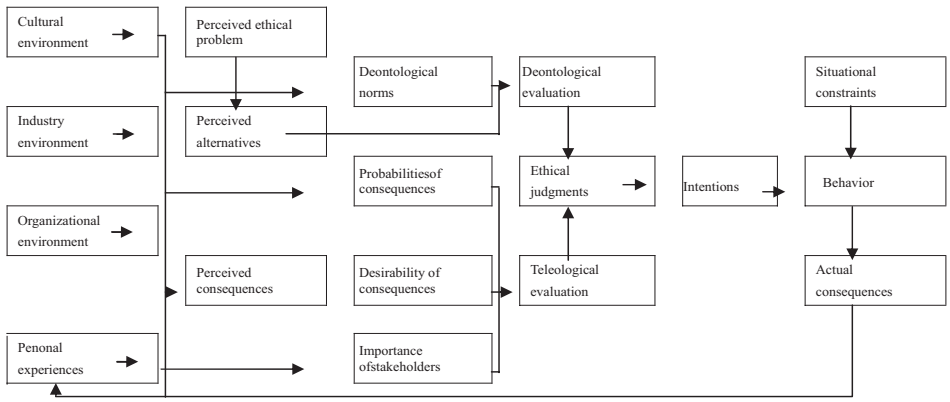

Fig. 3. The Hunt–Vitell model of ethical decision-making in marketing

Source: Adopted from Hunt and Vitell [1986]; Tsalikis and Fritsche [1989]; Hunt and Vitell [1992]; Vermillion et al. [2002].

logical evaluations are involved in making ethical judgments.Hunt and Vasquez-Parrago [1993] also supported the "core" of the Hunt–Vitell model, revealing that marketers in their study formed the ethical judgments and intervened to reward or discipline salespersons guided by both teleological and deontological factors [Ferrell et al. 2013].

CONCLUSIONS

Marketing has always been the subject of controversy. Despite its undoubtedly positive philosophy, multiple marketing activities of numerous companies around the world were questioned from the ethical perspective. In fact it's hard to deny that socio-economic consequences of marketing actions might be both positive and negative. The undesirable, negative results of the implementation of marketing strategies occur as unintended "side effects", but they also emerge because of intended, unethical manager's decisions.

Regardless of whether the positive or the dark side of marketing is considered to be the true one, the need for an ethical business behavior has been increasing for many years. In today's complex, global, uncertain and rapidly changing world companies are more and more often assessed in terms of their ability to satisfy the needs of not only customers, but also other stakeholders, such employees, local community, society in general or natural environment. It is a challenge, but there is an evidence that sustainable and ethical marketing may be beneficial for all parties.

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ETYCZNE DYLEMATY MARKETINGU – POZYTYWNA IDEA ORAZ JEJ POŻĄDANE I NIEPOŻĄDANE SKUTKI

Streszczenie. W artykule poruszono zagadnienie społeczno-ekonomicznych skutków działań marketingowych o zamierzonym i niezamierzonym charakterze. Koncepcja marketingu opiera się na pozytywnym założeniu tworzenia wartości dla nabywców i innych interesariuszy organizacji, ale skutki decyzji podejmowanych przez menedżerów ds. marketingu mogą być zarówno korzystne, jak i niekorzystne dla otoczenia. W artykule przedstawiono z jednej strony opinie wskazujące na pozytywne społeczno-ekonomiczne efekty marketingu, a z drugiej – zwrócono uwagę na nieetyczne praktyki marketingowe i ich konsekwencje. Omówiono także koncepcję orientacji przedsiębiorstwa na interesariuszy, stanowiącą rozwinięcie orientacji rynkowej i wychodzącą naprzeciw rosnącej potrzebie uwzględniania w działalności organizacji oczekiwań różnych grup odbiorców, a także przedstawiono wybrane modele podejmowania decyzji rynkowych o charakterze etycznym.

Słowa kluczowe: marketing, społeczno-ekonomiczne skutki działań marketingowych, etyka marketingu, społeczna odpowiedzialność przedsiębiorstwa, interesariusze, proces podejmowania decyzji o charakterze etycznym

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